SAMSUNG

REFRIGERATOR

SIDE BY SIDE TYPE

MODEL NAME : RH22H9010SR
RH29H9000SR

MODEL CODE : RH22H9010SR/AA
RH29H9000SR/AA

SERVICE Manual

REFRIGERATOR

RH22H**/RH29H**

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WARNING

IMPORTANT SAFETY NOTICE

The service guide is for service men with adequate backgrounds of electrical, electronic, and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or dealer cannot be responsible for the interpretation of this information.

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Technical Service Guide
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1. PRECAUTIONS (SAFETY WARNINGS)

- Unplug the appliance before the changing or repairing the electric parts.
- Use rated electronic Control equipment.
  → Make sure to check out ModeL name, Rated voltage, Rated current, Operation Temp, etc.
- Upon repair, make sure that harnesses are not to be water-penetrated and are bundled tight.
  → Should not be detached by a certain amount of external force.
- Upon repair, completely remove dust or other foreign substances from housing, harness, connector, etc.
  → To prevent fire by tracking, short, etc.
- Check out whether water has penetrated into the electronic Control system.
  → If there is any kind of trace, take necessary measures such as related component change, insulation tapping, etc.
- After repair, check out the assembled state of parts.
  → It should be the same as the previous state.
- Check out the surrounding conditions.
  → Change the location, if the fridge is located at humid, wet places or the installed state is unstable.
- In order to reduce the risk of electric shock the appliance must be properly grounded.
- Do not allow consumers to overload a certain outlet.
- Check out whether the power cord or the outlet is broken, squeezed, chopped off or heatdeformed.
  → Repair or replace the defective power cord/outlet immediately.
  → Make sure the power cord is not punctuated or stomped down.
- Do not allow consumers to keep food frayed or place bottles in the Freezer Room.
- Do not allow consumers to repair the fridge by themselves.
- Do not allow consumers to keep things except for food.
  → Pharmaceutical, Chemical substances : These are not possible to be fine-Controlled with a consumer fridge.
  → Flammable material (alcohol, benzene, ether, LPG, etc) : possibility of explosion.

PRECAUTIONS(SAFETY WARNINGS)

Read all instructions before repairing the product and follow the instructions in order to prevent danger or property damage.

CAUTION/WARNING SYMBOLS DISPLAYED

Warning	*Indicates that a danger of death or serious injury exists.*
Caution	*Indicates that a risk of personal injury or material damage exists.*

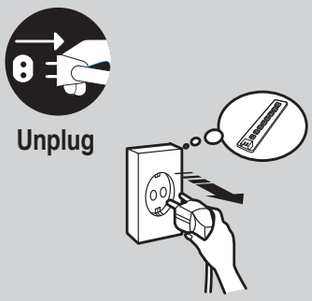
SYMBOLS

means "Prohibited".
means "Do not disassemble".
means "No contact".
means "Warning or Caution".
means "Unplug the unit before preforming service"
means "Earth or Ground".

Warning & Caution

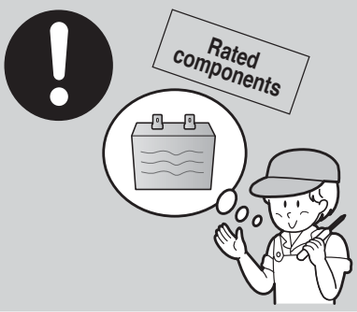
Plug out to exchange the interior lamp.

- *It may cause electric shock.*



Use the rated components on the replacement.

- *Check the correct model, rated voltage, rated current, operating temperature and so on.*



On repair, make sure that the wires such as harness are bundled tightly.

- *Bundle tightly wires in order not to be detached by the external force and then not to be wetted.*

On repair, remove completely dust or other things of housing parts, harness parts, and check parts.

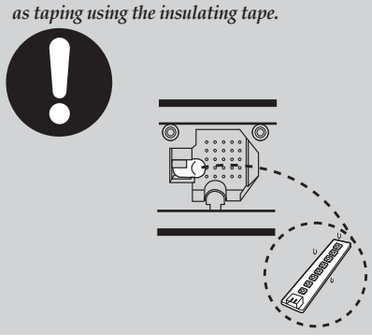
- *Cleaning may prevent the possible fire by tracking or short.*

After repair, check the assembled state of components.

- *It must be in the same assembled state when compared with the state before disassembly.*

Check if there is any trace indicating the permeation of water.

- *If there is that kind of trace, change the related components or do the necessary treatment such as taping using the insulating tape.*



PRECAUTIONS(SAFETY WARNINGS)

❊ *Please let users know following warnings & cautions in detail.*

⚠ Warning & Caution

Do not allow users to put bottles or kinds of glass in the freezer.

- *Freezing of the contents may inflict a wound.*

Prohibited

Do not allow users to store narrow and lengthy bottles or foods in a small multi-purpose room.

- *It may hurt you when refrigerator door is opened and closed resulting in falling stuff down.*

Prohibited

Do not allow users to store pharmaceutical products, scientific materials, etc., in the refrigerator.

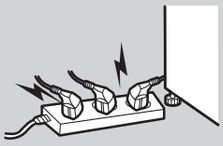
- *The products which need precise temperature control should not be stored in the refrigerator.*

Prohibited

Do not allow users to plug several appliances into the same power receptable.

- *May cause abnormal generation of heat or fire.*

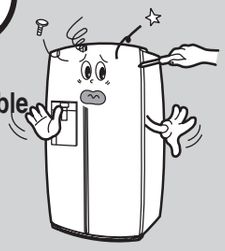
Prohibited



Do not allow users to disassemble, repair or alter.

- *It may cause fire or abnormal operation which leads to injury.*

Do not disassemble



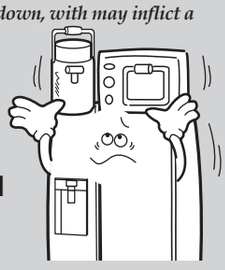
Do not allow users to bend the power cord with excessive force or do not have the power cord pressed by heavy article.

- *May cause fire.*

Do not allow users to store articles on the product.

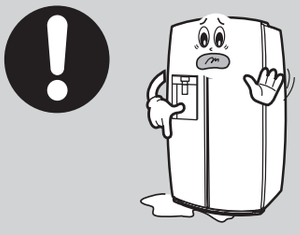
- *Opening or closing the door may cause things to fall down, with may inflict a wound.*

Prohibited



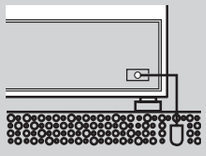
Do not allow users to install the refrigerator in the wet place or the place where water splashes.

- *Deterioration of insulation of electric parts may cause electric shock or fire.*



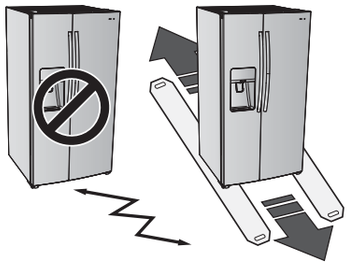
In order to reduce the risk of electric shock the appliance must be properly grounded.

Earth



⚠ **CAUTION**

When installing, servicing or cleaning behind the refrigerator, be sure to pull the unit straight out and push back in straight after finishing.



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PRODUCT SPECIFICATIONS

2-1. Introduction of Main Function

	Larger Capacity • The Samsung Side by side Refrigerator has plenty of space for all your groceries, beverages, frozen foods and leftovers. It's the perfect size for any occasion - holiday celebration, family reunion or Super Bowl party.
	Clearview In-door ice system • Located directly on the freezer door, the icemaker is easier to use and doesn't take up valuable shelf space. The seethrough glass also lets you check on the amount of ice available at a glance
	Surround Multi Air Outlets • Cooling air flows out through multiple outlets in every shelf level. This provides even cooling throughout the refrigerator, and quickly returns back to temperature when the door has been opened. So it maintains an ideal temperature to keep your food fresh longer.
	LED Lighting • This space-saving LED fixture illuminates every corner of the fridge, so things are easier to find. Also LED emits less heat than conventional bulb lighting, affecting less damage to the temperature management.

PRODUCT SPECIFICATIONS

2-2. Model Specification

NOTE

This operation instruction covers various models.
The characteristics of your appliance may differ slightly from those described in this manual.

- **Key features of your new refrigerator**
  Your Samsung Side-By-Side Refrigerator comes equipped with many space-saving, innovative storage and energy-efficient features.

- **Multi Airflow**
  Provides even cooling throughout the refrigerator to maintain optimal temperatures to keep food fresh.

- **LED Lighting**
  See everything in a new light with LED tower lighting.

- **Clear View Icemaker**
  The Icemaker is located in the freezer door, this ensures that all the shelf space can be fully utilized. Ice cubes are quickly produced and the clear ice bucket lets you easily see the amount of ice cubes produced.

- **Premium Design Ice & Water Dispenser**
  Quick and easy access to filtered water and cubed/crushed ice at your fingertips with the external dispenser.

- **E-smart function**
  The E- Smart function enables you to control and monitor your E-Smart refrigerator remotely for convenient use.
  And E-smart refrigerator is able to save the energy when it operates in SMART GRID (Demand Response)model.

PRODUCT SPECIFICATIONS

2-3. Basic Specification

ITEM		Specification	
Model		RH22H90**	RH29H90**
image			
Valid net capacity	Gross capacity (LT)	21.5 cu.ft	28.5 cu.ft
	Freezing compartment (LT)	7.2 cu.ft	10.1 cu.ft
	Cold compartment (LT)	14.3 cu.ft	18.4 cu.ft
Dimensions (width x depth x height)		912 x 721 x 1774 (35 7/8"x 28 1/4"x 69 6/8")	912 x 896 x 1774 (35 7/8"x 35 2/8"x 69 6/8")
Dimensions of package (width x depth x height)		972 x 820 x 1909 (38 2/8"x 32 2/8"x 75 1/8")	972 x 995 x 1909 (38 2/8"x 39 1/8"x 75 1/8")
Rated frequency (Hz)		60	60
Rated voltage (V)		115	115
Rated power consumption of motor (W)		155	155
Rated power consumption of heating device (W)		300	300
Refrigerator type		Indirect Cooling Refrigerator	
Refrigerant		R-134a	R-134a
Refrigerant charging volume		170g	170g
Product weight (kg)		141	151
Weight of packaged product (kg)		151	161

PRODUCT SPECIFICATIONS

2-3-1. Electric Parts Specification

Items				Specification	
Model				RH22H90**	RH29H90**
Freezing Component	Compressor		Type	NC1MV90ALP	NC1MV90ALP
			Drive mode	INVERTER	
			Charged oil	FREOL α-15(ESTER)	FREOL α-15(ESTER)
	Freezer		Freezer compartment	SPLIT FIN TYPE	
			Cold compartment	-	
	Condenser			Forced and spontaneous convection type	
	Desiccant			Molecular sieve XH-9	
	Capillary tube		Freezing compartment (kg/cm²)	ID0.85 x L3300 (4.4)	
			Cold compartment (kg/cm²)	-	
	Refrigerant			R-134a	
Component Temperature Sensor	Freezer Component			ON	
		THERMISTOR (F-SENSOR) 502AT	Strong (°C)	-20.5	-20.5
			Intermediate (°C)	-18	-18
			Weak (°C)	-16	-16
	Cold compartment			ON	
		THERMISTOR (R-SENSOR) 502AT	Strong (°C)	1	1
			Intermediate (°C)	3	3
			Weak (°C)	6	6
Components for defrosting	Defrosting Cycle	Initial defrosting cycle (simultaneous defrosting of F and R)		6 hours±10 minutes	
		Defrosting cycle of freezing component		6 to 48 hours (varying dependent upon operation conditions)	
		Defrosting cycle of cold component		-	
		Idle duration		-	
	Defrosting Sensor	F defrosting Sensor	Type	Thermistor (DTN-C502)	
			Specification	5.0 kΩ at 25°C	
		R defrosting Sensor	Type	-	
			Specification	-	
	Bimetal (F)		Type	Bimetal thermostat (BT-121-M)	
			Operating temperature (°C)	On: 40, Off: 60	
	Bimetal (R)		Type	-	
			Operating temperature (°C)	-	

PRODUCT SPECIFICATIONS

2-3-2. Electric Component

Items			Specification	
Model			RH22H90**	RH29H90**
Electric Component	Defrosting heater in freezing compartment	Power supplying during freezing compartment defrosting	AC 120V, 300W	AC 120V, 300W
	Defrosting heater in cold compartment	Power supplying during cold compartment defrosting	-	
	Home bar heater (cold compartment)	Ambient humidity sensor interlocking	-	
	Door heater (cold compartment)	Ambient humidity sensor interlocking	DC 12V, 17W	
	Damper heater	Kept tumed on	DC 12V, 1W	
	Bimetal for preventing overheating of defrosting heater in freezing compartment		Thermostat (BT-121-M) On: 40°C, Off: 60°C	
	Bimetal for preventing overheating of defrosting heater in cold compartment		-	
	Noise filter		5.0 ㏀ at 25℃	
	OLP	Type	4TM445PHBYY-82	4TM445PHBYY-82
		Operating temperature (°C)	69°C	69°C
		Shutdown temperature (°C)	125°C	125°C
	Cooling fan motor in freezing compartment		DC 12V, DREP3030LD	
	Cooling fan motor in cold compartment		-	
	Compressor cooling fan motor		DC 12V, DRCP8020LA	
	Motor-driven damper (True-taste chamber)		-	
	Motor step valve		DC14V / 0.7A	
	Freezing compartment lamp		DC 12V, 1.92W(5 PORT) X 2EA, + 0.96W(3 PORT) x 1EA	
	Cold compartment lamp		DC 12V, 1.92W(5 PORT) X 2EA, + 0.96W(3 PORT) x 1EA	
	Door reed switch (home-bar)		-	
	Door reed switch		DC 200V 0.5A	
	Power cord		SPT-3	SPT-3
	Grounding screw		BSBN (BRASS SCREW)	

PRODUCT SPECIFICATIONS

Items			Specification			
Model			RH22H90**	RH29H90**	RH22H90** (E-cost)	RH29H90** (E-cost)
Electric Component	Defrosting heater in freezing compartment	Power supplying during freezing compartment defrosting	AC 120V, 300W	AC 120V, 300W	AC 120V, 300W	AC 120V, 300W
	Defrosting heater in cold compartment	Power supplying during cold compartment defrosting	-			
	Home bar heater (cold compartment)	Ambient humidity sensor interlocking	-			
	Door heater (cold compartment)	Ambient humidity sensor interlocking	DC 12V, 17W			
	Damper heater	Kept tumed on	DC 12V, 1W			
	Bimetal for preventing overheating of defrosting heater in freezing compartment		Thermostat (BT-121-M) On: 40°C, Off: 60°C			
	Bimetal for preventing overheating of defrosting heater in cold compartment		-			
	Noise filter		5.0 kΩ at 25℃			
	OLP	Type	4TM445PHBYY-82	4TM445PHBYY-82	4TM445PHBYY-82	4TM445PHBYY-82
		Operating temperature (°C)	69°C	69°C	69°C	69°C
		Shutdown temperature (°C)	125°C	125°C	125°C	125°C
	Cooling fan motor in freezing compartment		DC 12V, DREP3030LD		DC 12V ARES2120RB	
	Cooling fan motor in cold compartment		-			
	Compressor cooling fan motor		DC 12V, DRCP8020LA		DC 12V, ARCS2088LA	
	Motor-driven damper (True-taste chamber)		-			
	Motor step valve		DC14V / 0.7A			
	Freezing compartment lamp		DC 12V, 1.92W(5 PORT) X 2EA, + 0.96W(3 PORT) x 1EA			
	Cold compartment lamp		DC 12V, 1.92W(5 PORT) X 2EA, + 0.96W(3 PORT) x 1EA			
	Door reed switch (home-bar)		-			
	Door reed switch		DC 200V 0.5A			
	Power cord		SPT-3	SPT-3	SPT-3	SPT-3
	Grounding screw		BSBN (BRASS SCREW)			

PRODUCT SPECIFICATIONS

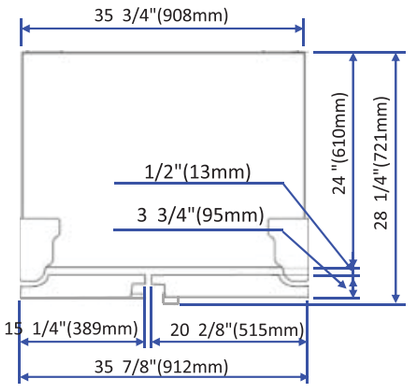
2-4. Model Inform For E-Cost (Model Code, introduction application date, Weight Inform)

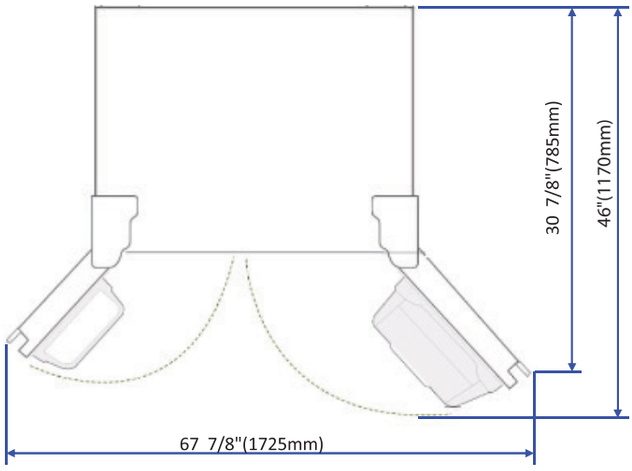
NO	Model Code	introduction application date	Weight	
			NET	GROSS
1	RH29H9000SR/AA	08/06/2015	158	170
2	RH22H9010SR/AA	08/06/2015	154	165
3	RH29H9000SR/AA	11/12/2017	151	161
4	RH22H9010SR/AA	11/12/2017	141	151

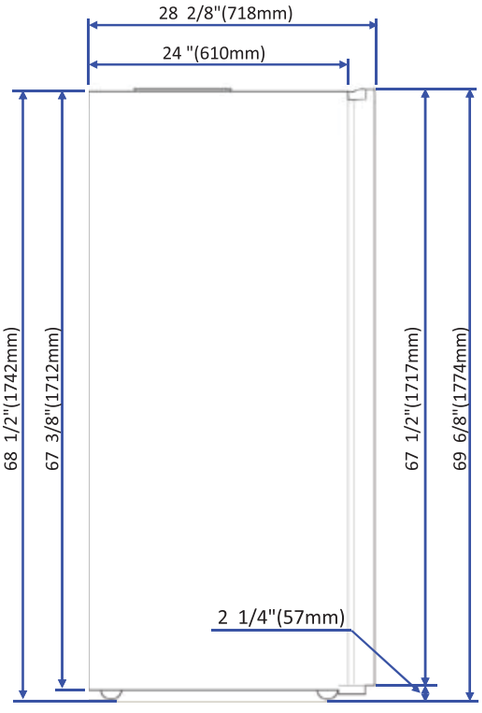
PRODUCT SPECIFICATIONS

2-5. Dimensions (mm/inch)

- **MODEL : RH22H90****

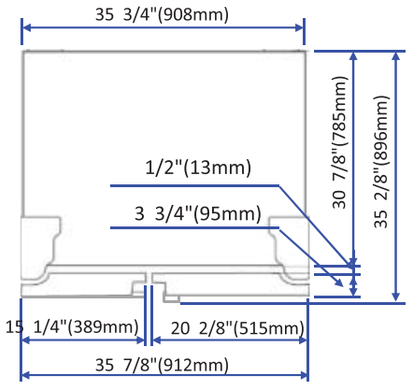


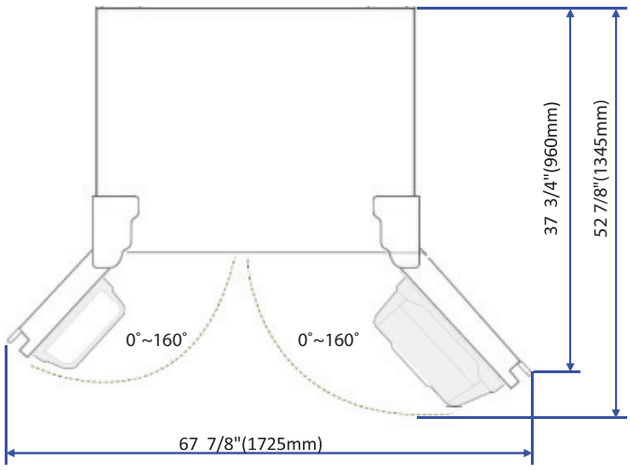


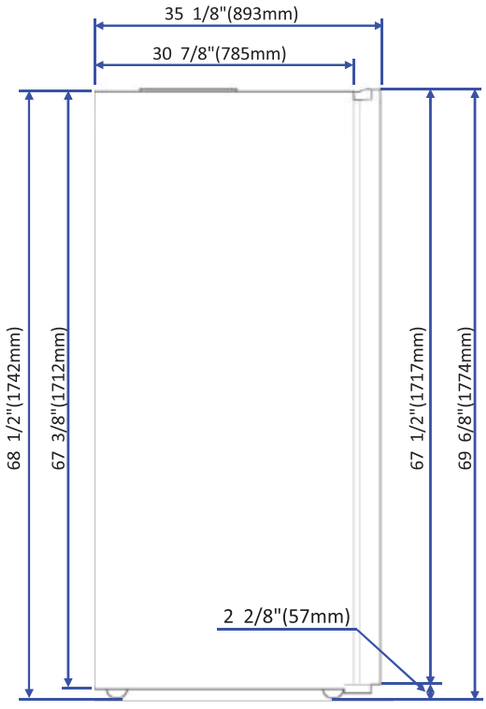


PRODUCT SPECIFICATIONS

- **MODEL : RH29H90****







PRODUCT SPECIFICATIONS

2-6. Optional Material Specification

Photograph	Part Name	Part Code	Quantity	Remark
	FILTER-WATER	DA29-00019A	1	ALL MODEL
	ASSY PACKING	DA90-08491A	1	

3. DISASSEMBLY & REASSEMBLY

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DISASSEMBLY AND REASSEMBLY

3-1. PRECAUTION

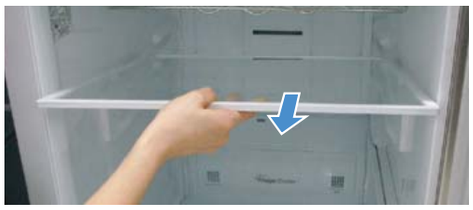
- Unplug the appliance before servicing or replacing electrical parts.
- Remove any foreign matter or dust from the power plug pins.
  - Otherwise there is a risk of fire.
- Do not use a cord that shows cracks or abrasion damage along its length or at either end.
- Do not plug several appliances into the same multiple power board. The refrigerator should always be plugged into its own individual electrical which has a voltage rating that matched the rating plate.
  - This provides the best performance and also prevents overloading house wiring circuits, which could cause a fire hazard from overheated wires.
- Do not install the refrigerator in a damp place or place where it may come in contact with water.
  - Deteriorated insulation of electrical parts may cause an electric shock or fire.
- In order to reduce the risk of electric shock the appliance must be properly grounded.
- Do not put bottles or glass containers in the freezer.
  - When the contents freeze, the glass may break and cause personal injury.
- Do not store volatile or flammable substances in the refrigerator.
  - The storage of benzene, thinner, alcohol, ether, LP gas and other such products may cause explosions.

- **NEED TOOL**

Item	How to use	Pictures
Phillips Head Driver	Use for assembling and disassembling of screw	
Flat Head Driver	Use for assembling and disassembling of Beverage Station, Dispenser, Display, Cover Lamp etc...	
Magnet	Use for checking of the F/R Fan	
Hex Wrench ø2mm	Use for assembling and disassembling of Handle	

DISASSEMBLY AND REASSEMBLY

3-2. Interior-Fridge

Part Name	Description	Figure
Shelf	Pull the Shelf out to the front.	
Drawer cover	Remove all Drawers before disassembling the cover.	
	Pull the cover out to the front.	
	Pull the flip cover out to the front.	

DISASSEMBLY AND REASSEMBLY

3-3. Multi Duct-Fridge

Part Name	Description	Figure
Multi Duct (Fridge)	After disengage the Evaporator Cover, pull the Multi duct-Fridge in the direction of the front.	
	Disengage the housing connector.	
	Assembly will progress in reverse of disengage, and assemble the GROMMENT and MULTI (2ea.) to the tap. And assemble to fix the center of MULTI and GROMMET which is on the center of rear wall of freezer.	

DISASSEMBLY AND REASSEMBLY

3-4. Water Filter (Assembly & Disassembly)

Part Name	Description	Figure
Water Filter	Turn the water filter count-clockwise. (Refer to the picture)	
	Remove the water filter by pulling it. (Refer to the picture)	
	Push the water filter directly.	
	Turn the water filter clockwise until it locked.	

CAUTION

Be sure to flush the dispenser thoroughly (approx. 6 to 7 minutes), otherwise water may drip from the dispenser. This means that there is still air in the line.

DISASSEMBLY AND REASSEMBLY

3-5. Case Water Filter

Part Name	Description	Figure
Case Water Filter	Before disassembling the Case Water Filter take out water filter and drawers and shelves located on the Case Water Filter.	
	Remove screws.	
	While pushing the Tube Fitting, remove the 2 Water Tube.	
	Turn the refrgerator back and remove the Water Tube.	
	Pull the Water hose out.	
	Disconnect the Housing.	
	Pick the Case Water Filter out.	

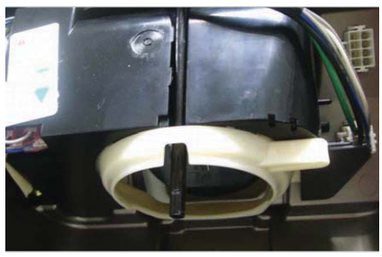
DISASSEMBLY AND REASSEMBLY

3-6. Cover-Display & Water-Dispenser

Part Name	Description	Figure
Cover-Display	Remove a screw under the display cover.	
	Remove the display cover by pulilng it up.	
	Disengage the housing connect of display cover.	

DISASSEMBLY AND REASSEMBLY

3-7. Water-Dispenser

Part Name	Description	Figure
Water-Dispenser	Disengage the Housing Connectors by pushing a flatblade screwdriver.	
	Remove 2 screws of the Case Ice Route Assy.	
	Pull the Case Ice Route Assy.	
	Assembly shall be in order from the disassembly. Case-Ice and Route shall be assembled inside of hose. Otherwise, assemble cannot be accomplished.	
	When assembling Cover-Display, first insert it from lower and then assemble to upper. (Check the wire inside.) and knock the display into the Case dispenser.	
	After leveling, check the dispenser (water supply, operation of auger motor) for pushing lever dispenser.	

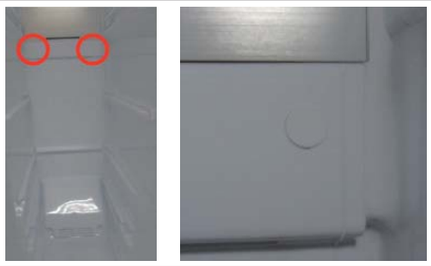
DISASSEMBLY AND REASSEMBLY

3-8. Interior-Freezer

Part Name	Description	Figure
Shelf	Pull the Shelf out to the front.	
Drawer Cover	Remove all Drawers before disassembling the cover.	
	Pull the cover out to the front.	

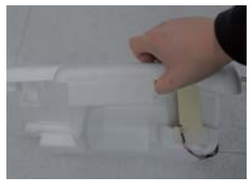
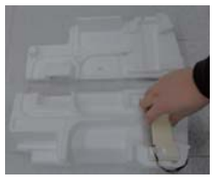
DISASSEMBLY AND REASSEMBLY

3-9. Evaporator Cover-Freezer

Part Name	Description	Figure
Evap. Cover (Freezer)	Remove the Cap Screw.	
	Remove the 4 screws by turning counterclockwise.	
	Pull the Evap. Cover in the direction of the front.	

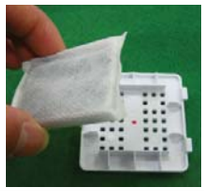
DISASSEMBLY AND REASSEMBLY

3-10. Multi Duct (Freezer)

Part Name	Description	Figure
Multi Duct (Freezer)	1. Disassemble the INSULATION DUCT after remove the tape.	
	2. Disassemble the Electrically-driven DAMPER after disassemble the INSULATION DUCT REF UP.	 
	3. Remove the two COVER SCREW which is on the center of freezer by driver(-).	
	4. Remove the four SCREW of COVER EVA FRE.	
	5. Hold the bottom of COVER EVA FRE and pull it to disassemble.	
	6. Hold the bottom of MULTI COVER and pull it. And than hold the upper and disassemble it completely.	

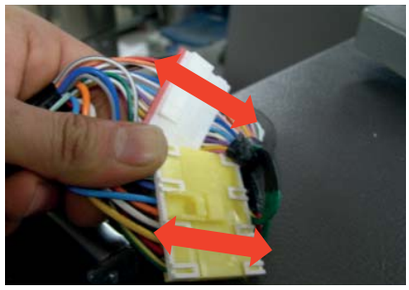
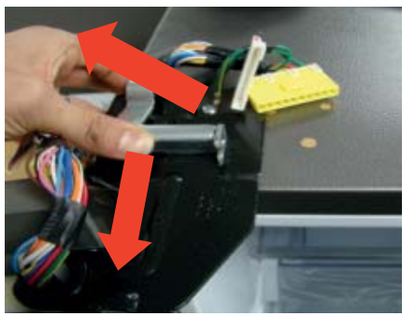
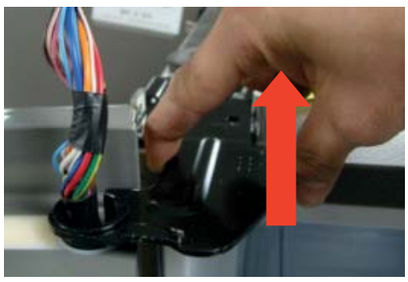
DISASSEMBLY AND REASSEMBLY

3-11. Deodorizer

Part Name	Description	Figure
Cover Deodorizer	1. Remove the Cover Deodorizer using flat head driver.	
	2. Replace Catalyst.	
	3. Reassemble in the reverse order.	

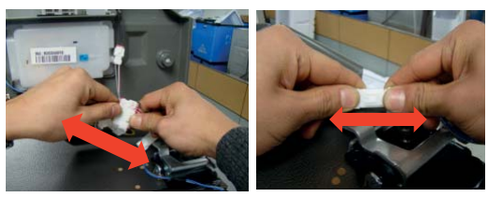
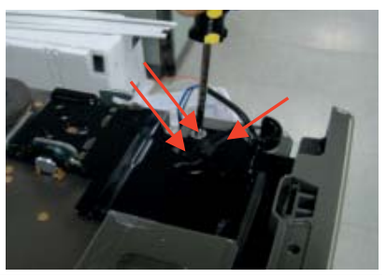
DISASSEMBLY AND REASSEMBLY

3-12. Assembly Hinge-Up Disassembling (Freezing Compartment)

Part Name	Work sequence	Remarks
Door	1. Disconnect the power cord, and Remove 3 cover screws using a Phillips screwdriver. Then open the refrigerator door and pull the hooks on the sides to loosen the cover. Lift up the cover and towards you to detach it.	
	2. Disassemble two connectors of the housing.	
	3. Push the fixer hinge up, and pull it forward to remove it.	
	4. Dissemble the top hinge from the front the door.	

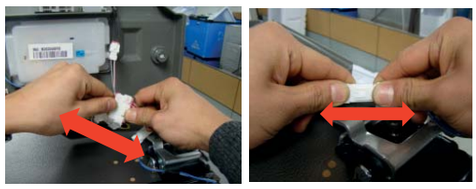
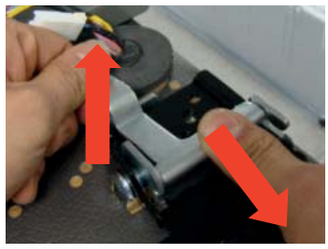
DISASSEMBLY AND REASSEMBLY

3-13. Assembly Hinge-Up Disassembling (Show Case of Cold Compartment)

Part Name	Work sequence	Remarks
Door	1. Disconnect the power cord, and Remove 3 cover screws using a Phillips screwdriver. Then open the refrigerator door and pull the hooks on the sides to loosen the cover. Lift up the cover and towards you to detach it.	
	2. Disassemble two connectors of the housing.	
	3. Disasemble the three fastening screws on the top hinge of the show case.	
	4. Dissemble the top hinge from the front the door.	

DISASSEMBLY AND REASSEMBLY

3-14. Assembly Hinge-Up Disassembling (Cold Compartment)

Part Name	Work sequence	Remarks
Door	1. Disconnect the power cord, and Remove 3 cover screws using a Phillips screwdriver. Then open the refrigerator door and pull the hooks on the sides to loosen the cover. Lift up the cover and towards you to detach it.	
	2. Disassemble two connectors of the housing.	
	3. Push the fixer hinge up, and pull it forward to remove it.	
	4. Dissemble the top hinge from the front the door.	
	5. Diassemble the entire door.	

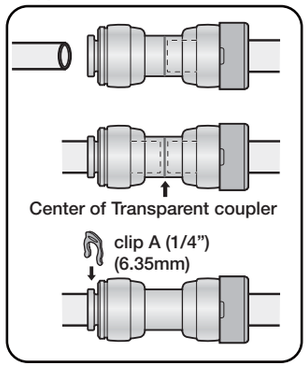
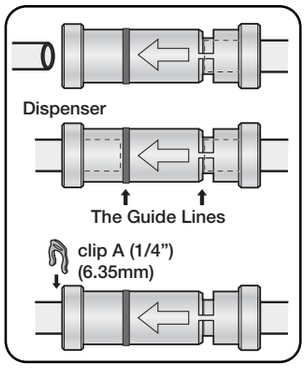
DISASSEMBLY AND REASSEMBLY

3-15. Assembly Locker Disassembling (Cold Compartment)

Part Name	Work sequence	Remarks
Door	1. Disassemble the entire door as described in Section 3-5, and lay the door on the floor, and disassemble the two fastening screws on the cover lock of the internal door.	
	2. Disassemble the two fastening screws on the locker of the external door.	
	3. Assemble the doors in reverse order of disassembling.	
	4. Once assembling is complete push the lever with a hand and check if the cam lock on the internal door is lifted toward the bottom of the door.	

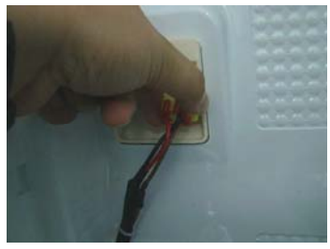
DISASSEMBLY AND REASSEMBLY

Part Name	Description	Figure
Door	With the Door closed, remove the door from Remove the Upper Hinge with handling Wires.	
	Remove the door from the lower hinge by lifting up the door straight. **CAUTION** Be careful not to pinch the water tubing and the wire harness on the door. Lift up the door straight in upper direction until the water hose is eliminated from lower hinge. Do not pull the door forward to remove it. It cause injury of water hose and tubing.	

Part Name	Description	Figure
Reassembly doors	• The Water Line must be fully inserted to the center of transparent coupler (Type A) or the line (Type B) to prevent water leakage from the dispenser. • Insert the clip in the install pack and check that it holds the line firmly.	Type A  Type B 

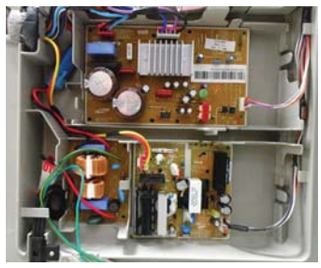
DISASSEMBLY AND REASSEMBLY

3-16. Evaporator

Part Name	Description	Figure	
		Freezer	Fridge
Evaporator	Remove the Evaporator cover.		
	Disengage the housing connector. (left)		
	Disengage the housing connector. (right)		
	Remove the evaporator by pulling the lower part of the evaporator while lifting it up.		

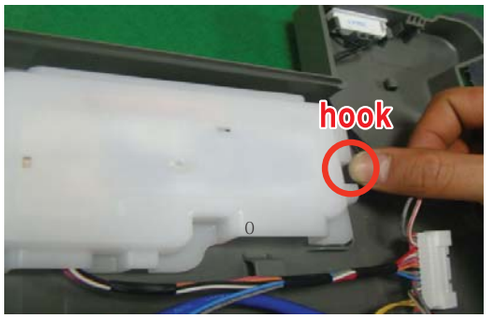
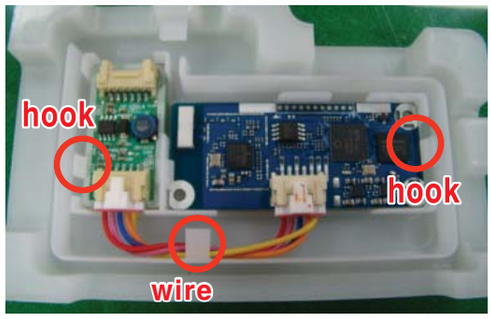
DISASSEMBLY AND REASSEMBLY

3-17. Main PCB and Inverter PCB Disassembling (whole)

Work sequence	Remarks
1. Pull the refrigerator forward to make space for servicing.	
2. Disassemble the four screws.	
3. Disassemble the thirteen connectors of the housing(Number of the housing connectors may vary dependent upon models and functions). While pressing the upper hook on the location shown on the figure, pull the main main PBA and remove it.	
4. Disassemble the five connectors of the housing. While pressing the hooks on the left and the right side on the locations shown on the figure, pull the inverter PBA and the SMPS PBA to remove them.	

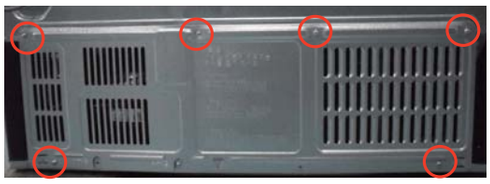
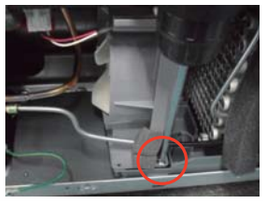
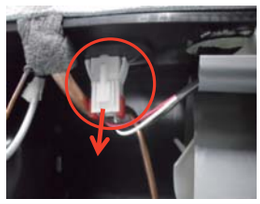
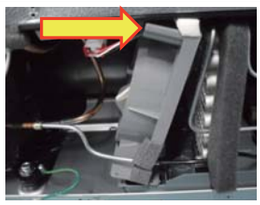
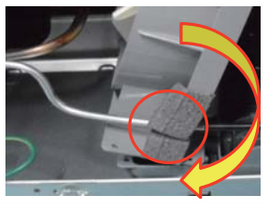
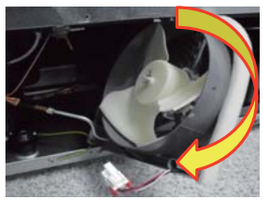
DISASSEMBLY AND REASSEMBLY

3-18. Disassemble the WIFI module.

Part Name	Description	Figure
WIFI module	1. Disassemble the top table after loosen 3 screw which is supported the top table. 2. Disassemble two connectors of the housing.	
	1. Press the hook of case PBA to disassemble.	
	1. Disassemble the wire which is connected by power conversion boards. 2. Press the hook of power conversion module to disassemble.	

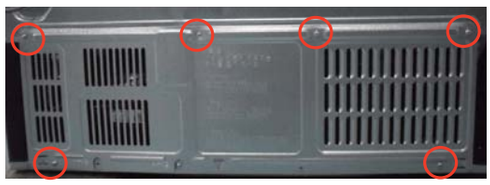
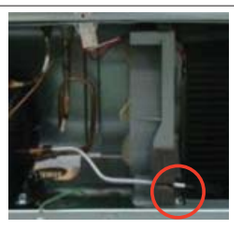
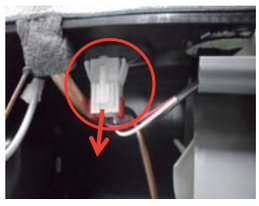
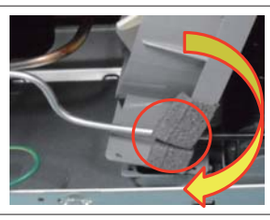
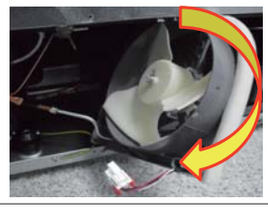
DISASSEMBLY AND REASSEMBLY

3-19. COMP Cooling Fan Replacing

Work sequence	Remarks
1. Remove five screws from the Comp Cover.	
2. Remove the drain hose. Disassemble one screw.	
3. Disassemble the connector.	
4. Pull the connector forward, and incline it toward the drain hose.	
5. Rotate the connector around the pipe.	
6. Once disassemble the fan is complete, assemble the fan in reverse order of disassembling.	

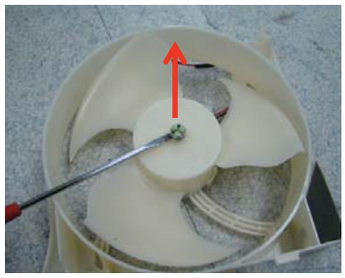
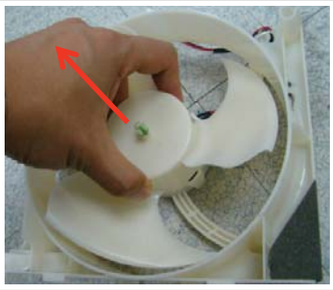
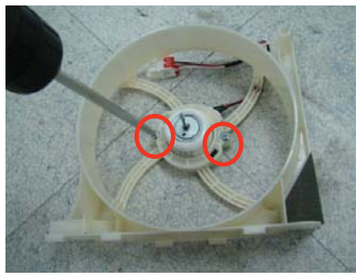
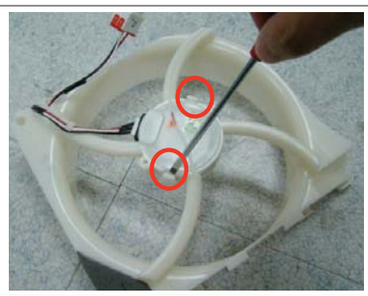
DISASSEMBLY AND REASSEMBLY

3-20. COMP Cooling Fan Replacing– For E-cost model

Work sequence	Remarks
1. Remove five screws from the Comp Cover.	
2. Remove the drain hose. Disassemble one screw.	
3. Disassemble the connector.	
4. Pull the connector forward, and incline it toward the drain hose.	
5. Rotate the connector around the pipe.	
6. Once disassemble the fan is complete, assemble the fan in reverse order of disassembling.	

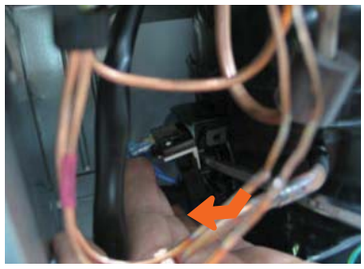
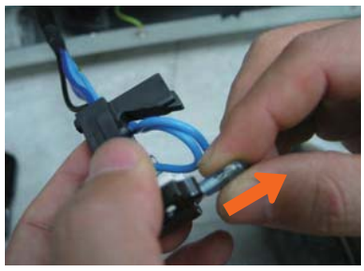
DISASSEMBLY AND REASSEMBLY

3-21. COMP Cooling Fan Motor Replacing

Work sequence	Remarks
1. Remove the spring with a flat screwdriver.	
2. Hold the motor, and pull the fan out to remove the fan.	
3. Remove two screws from the motor.	
4. Use a flat screwdriver to remove the bracket motor.	
5. After pulling the bracket motor, remove the motor.	

DISASSEMBLY AND REASSEMBLY

3-22. Relay Protector O/L disassembling (Whole)

Work sequence	Remarks
1. Remove five screws from the Comp Cover.	
2. Remove the cover relay with a flat screwdriver. CAUTION Caution: Pipe bending or exercise of excessive force may pinching on the hands when removing the cover.	
3. User a flat driver to disassemble the relay protector from the compressor.	
4. Pull the connector to disassemble the relay as shown on the figure.	

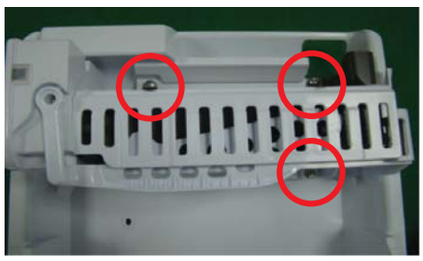
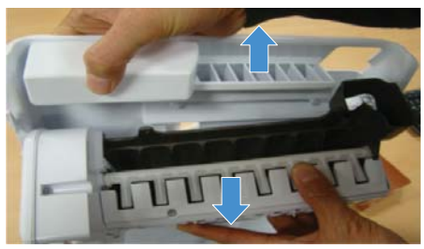
DISASSEMBLY AND REASSEMBLY

3-23. Step Valve Disassembling (whole)

Work sequence	Remarks
1. Remove five screws from the Comp Cover.	
2. Disassemble the housing connector from the step valve.	
3. Disassemble one screw, and pull the step valve up to remove the valve as shown on the figure.	
4. Remove the refrigerant, and disassemble the step valve from the connection pipe. CAUTION Exerting excessive force when forming the pipe causes bending of the pipe.	

DISASSEMBLY AND REASSEMBLY

3-24. Ice Maker Compartment

Part Name	Description	Figure
Ice Bucket Assy	Disassemble the Ice-Bucket Assy by holding the handles and pulling up the bottom part slightly.	
Cover I/M	Lift up the Icemaker Cover and gently pull out.	
Assy Ice Maker-Indoor	Unscrew the 4 screws and disassemble the Auger Motor Assy as shown.	
	Disconnect the housing connectors by gently pulling.	
Ice Maker Assy	Unscrew the 3 screws.	
	Disassemble the Ice Maker Assy.	

DISASSEMBLY AND REASSEMBLY

3-25. Auger-Motor

Part Name	Description	Figure
Auger-Motor	1. Pull the shelf out to the front side. 2. Unscrew 4 screws by turning counter-clockwise. 3. Disconnect the housing connector by pulling as shown.	① ② ③

DISASSEMBLY AND REASSEMBLY

3-26. Disassembling the internal handle

Part Name	Work sequence	Remarks
Handle	1. Rotate one set screw counterclockwise with a hexagonal wrench to remove it from the bottom of the handle.	
	2. Pull the bottom of the handle to remove it.	
	3. Slide the entire handle downward to disassemble it.	

3-27. Disassembling the external handle

Part Name	Work sequence	Remarks
Handle	1. Use a Philips screwdriver to remove six screw caps.	
	2. Disassemble six set screws of the handle to remove the handle.	

4. TROUBLESHOOTING

4-1. Function for failure diagnosis..... 48
4-2. Diagnostic method according to the trouble symptom(Flow Chart)..... 62

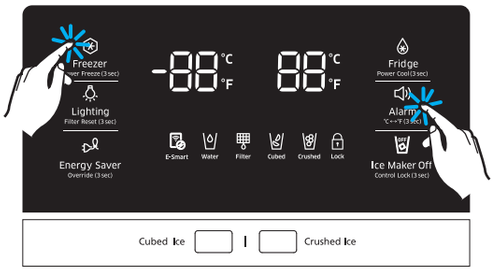
TROUBLESHOOTING

4-1. Function for failure diagnosis

4-1-1. Test mode (manual operation / manual defrost function)

- If Freezer Key + Alarm Key on the front of panel are pressed simultaneously for 8 seconds , it will be changed to the test mode and all displays on the front of panel will be off.
- If any key on the front of panel is pressed within 15 seconds after the test mode, it will be operated as below sequence : Manual operation(FF) -> manual defrost of freezer compartments(Fd) -> cancel(Display all off)
- If any key on the front of panel is not pressed within 15 seconds after the test mode, the test mode will be canceled and it will be returned to previous mode.

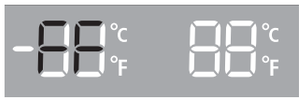
1) Manual operation function



Freezer Key + Alarm Key are pressed simultaneously for 8 seconds, (displays are all off) It will be changed to the test mode (manual operation) by pressing any key.

1-1) If any key is pressed once in test mode, blinks "FF" on the display and it indicates the refrigerator has entered the manual operation. At this moment, buzzer beeps as an alarm.
1-2) If manual operation is selected, compressor will run at once without 7 minutes delay in any mode. If the refrigerator is on the defrost cycle at the moment, defrost will be finished and manual operation will begin.(Be careful if manual operation get started at the moment of compressor off, over load could be occurred)

Compulsion working : 3600RPM



1-3) If manual operation works, compressor & f-fan operate continuously for 24 hours and fresh food compartment will be controlled by the setting temperature.
1-4) When the manual operation runs, setting temperature will be selected automatically as below: freezer compartment -8°F(-23°C), fresh food compartment 34°F(1°C).
1-5) During manual operation, Power Freeze & Power Cool function will not be work.
If a function is selected, the power function icon of the selected function will be off automatically after 10 seconds.
1-6) Manual operation can be canceled by removing power from the unit, then resupplying power.
1-7) Alarm(0.25 sec ON/ 0.75 sec OFF) will beep continuously until manual operation is completed and there is no function to make the sound stop.

2) Forced Defrost

2-1) When you press any key one more time at the manual operation status, Fd lights up on the Display Panel. At this time, the Forced Operation stops immediately and F-Defrost will be performed at the same time.
2-2) At this time, it will send out “Beep” sound for 2 seconds and then it will perform Forced F Defrost while sending out “0.5 sec On and 0.5 sec Off” sound.

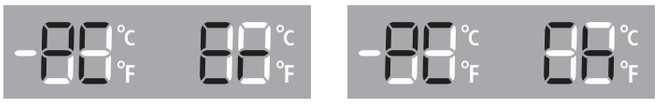
3) Test cancel mode

3-1) During the defrosting of freezer compartment if the display panel change to the test mode and test button is pressed one more time, defrosting of freezer compartment will be canceled and the unit will return to the normal operation.
Or, all test functions will be canceled by turning main power ON and OFF.

4-1-2. Display function of Communication error

1) Display function when Panel ↔ MAIN MICOM communication has error

1-1) If there is no answer for 10 seconds after the panel micom received the requirement of communication, "PC - Er" or "PC - Ch" display on the panel PCB will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)



1-2) “PC - Er" or "PC - Ch" display on the Panel Display will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)

2) Display function when Panel ↔ MAIN MICOM OPTION has error

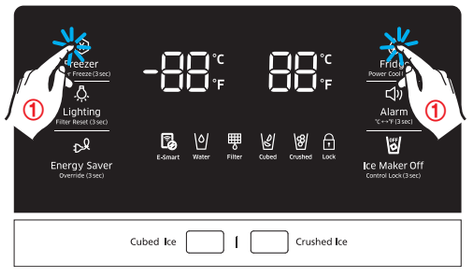
2-1) "oP - Er" or "oP - Ch" code is repeatedly ON/OFF until Option error settles down.

TROUBLESHOOTING

4-1-3. Self-diagnostic function

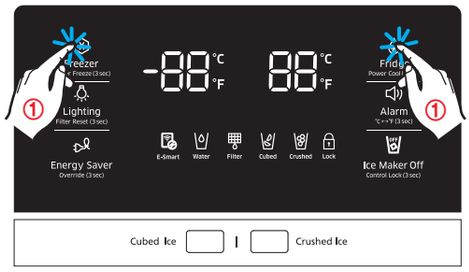
1) Self-diagnostic function in the Initial power ON

1-1) Micom operates self-diagnostic function to check the temperature sensor condition within 1 second when the refrigerator turned On initially.
1-2) If bad sensor is detected by the self-diagnostic function, the applicable display LED will blink for 0.5 sec.
At this moment, there is no beep sound.(Refer to self-diagnostic CHECK LIST)
1-3) Self-diagnostic button is recognized only when the error is displayed by the bad sensor. Display does not operate normally but temperature control will be controlled by the emergency operation.
1-4) When the error is detected by self-diagnosis, the error can be canceled automatically if all troubled sensors are corrected or Self-diagnostic function key (Freezer Key + Fridge Key) are pressed simultaneously for 8 seconds.
(Return to normal display mode)



① If Freezer Key + Fridge Key are pressed simultaneously for 8 seconds, the error mode by self-diagnosis will be canceled.

2) Self-diagnostic function during normal operation



② If Freezer Key + Fridge Key are pressed simultaneously for 8 seconds, the self-diagnosis function will be selected.

2-1) If Freezer Key + Fridge Key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display will operate for 2 seconds (ON/OFF 0.5sec each).
If Freezer Key + Fridge Key are pressed simultaneously for 8 seconds (including above 2 seconds), self-diagnostic function will be selected.
2-2) At this moment, self-diagnostic function will be returned with buzzer sound 'ding-dong'.
If there is an error, display of error will be operated for 60 seconds and then return to normal condition whether problem is corrected or not.
(Refer to self-diagnosis CHECK LIST)
2-3) Input by button is not accepted during self-diagnostic function.

TROUBLESHOOTING

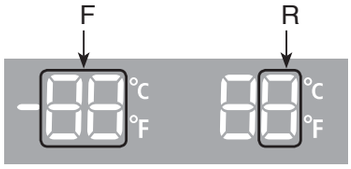
※ Self-diagnostics check list

LED F	LED R	Item	Trouble contents	Diagnostic method
		F-Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit. Display error of detecting temperature of sensor : more than 149°F(+65°C) or less than -58°F(-50°C)	When measuring the voltage between the Main PCB CN30 3PIN - 7PIN, it should read between 4.5V~1.0V.
		R-Sensor Error		When measuring the voltage between the Main PCB CN30 5PIN - 7PIN, it should read between 4.6V~1.0V.
		F-DEF-Sensor Error		The voltage of MAIN PCB CN30 4PIN - 7PIN shall be between 4.5V~1.0V
		Ambient-Sensor Error		The voltage of MAIN PCB CN30 11PIN - 7PIN shall be between 4.5V~1.0V
		Ice Maker Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit Display error of detecting temperature of sensor: more than 149°F (+65°C) or less than -58°F(-50°C)	The Voltage of MAIN PCB CN90 3PIN - 9PIN Shall be between 4.5v ~ 1.0v
		Humidity-Sensor Error	Separation of sensor housing part, contact error, disconnection, short circuit	When measuring the voltage between the Main PCB CN30 12PIN - 7PIN, it should read between 4.5V~1.0V.
		F-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN74 4PIN - 1PIN shall be between 7V~12V
	or	C-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN74 2PIN - 1PIN shall be between 7V~12V
		F-DEF Error	Separation of freezer compartment defrost heater housing part, contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though freezer compartment defrost is heating continuously for more than 100 minutes.	After separating Main PCB CN70& SMPS CN01 wire from PCB, Resistance value between CN70 9PIN – SMPS CN01 3PIN 7%.(Resistance value is varied by input power) 0 ohm : heater short, ∞ ohm : wire/bimetal open (Must power off)
		Ice Maker Function Error	When the Freezer Ice Maker error occurs more than 3 times, the error will be displayed.	After replacing the Ice Maker, check if it operates normal.
		Damper-Heater Error	Display error when open error is detected by damper heater : separation of Damper Heater housing part, contact error, disconnection, short circuit.	After separating MAIN PCB CN75 wire from PCB, resistance value between CN74 1PIN - 2PIN wire shall be 135 ohm± 7%. 0 ohm : heater short, ∞ Ohm : wire / bimetal Open.
		Panel ↔ Main Communication Error	Display pc - Er in the panel with alarm : MICOM MAIN ↔ PANEL communication error.	Actually, If there is not a problem, it is desirable to replace Main and Panel PCB With the oscilloscope after a cable problem confirming.
		Main - Inverter Communication Error	Display 44Er in the panel : Inverter MICOM ↔ Main MICOM communication error.	Actually, If there is not a problem, it is desirable to replace Main and Inverter PCB With the oscilloscope after a cable problem confirming.

TROUBLESHOOTING

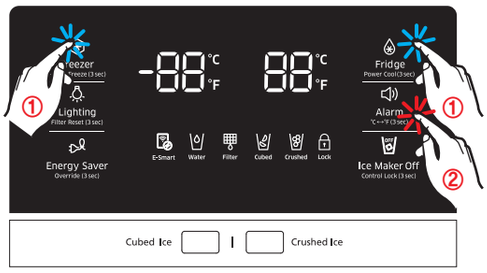
※ Self-diagnostics check list

LED		Item	Trouble contents	Diagnostic method
F	R			
46		I/O Expander Communication Error	Display 46Er in the panel : I/O Expander ↔ Main MICOM communication error.	It is desirable to replace Main PCB.
71		The F compartment abnormal hightemperature indicator blinks	When the freezer temperature is abnormally high or the freezer door is open for a certain period of time and the freezer temperature increases, the freezer display blinks.	The temperature has been abnormally increased. Check if the door has been open for a long time or if hot food has been stored in the compartment. If the reason for the error is removed, the error code disappears after a pre-determined period of time.
72		The R compartment abnormal hightemperature indicator blinks	When the freezer temperature is abnormally high or the fridge door is open for a certain period of time and the fridge temperature increases, the fridge display blinks.	Check if door has been open for a long time or if hot food has been stored in the compartment. If the reason for the error is removed, the error code disappears after a pre-determined period of time.
81	8E or 8C	Comp starting Failure Error	When the Compressor fails starting	Check if there is a short between compressor terminals. Check IPM Voltage [Under 13.5V] Check if there is a short between IPM Pins [#1~33] Check the Compressor and the Cycle
82		IPM Fanlt Error	When there is a IPM Fault error	
83		Comp Abnormal current Detection Error	When there is abnormal current detected at the Compressor	Check the Compressor connections Check the voltage of Resistance of R308 [0.09Ohm] Check the Compressor and the Cycle
84		Motor Locked Over RPM Error	When there is a Compressor restriction error	Check the voltage of Resistance of R308 [Short/Open] Check the voltage of both of C103 terminals [Unstable Voltage] Check the Compressor and the Cycle
85		Comp under voltage Error	When there is a low voltage error	Check the voltage of Resistance of R513 [Short/Open]
86		Comp over voltage Error	When there is a over voltage error	Check the voltage of Resistance of R501, R505, R509 [Short/Open]



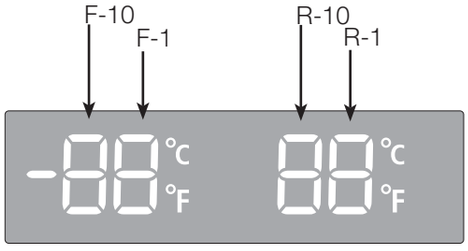
TROUBLESHOOTING

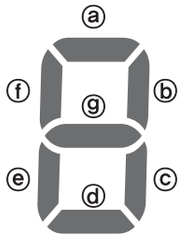
4-1-4. Display function of Load condition



① If Freezer Key + Fridge Key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 4 seconds.
② If take the finger off from above keys and press Alarm, load condition mode will be started.

1) If Freezer Key + Fridge Key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display of fresh food and freezer compartments will blink ALL ON/OFF with 0.5 for 4 seconds.
2) At this moment, If Alarm Key after Freezer Key + Fridge Key is pressed, load condition display mode will be returned with alarm. At LED all on state, only load condition display will blink ON/OFF with 0.5 seconds interval.
3) Load condition display mode shows the load that micom signal is outputting.
However, It means that micom signal is outputting, it does not mean whether load is operating or not. That is to say that though load operation is displayed, load could not be operated by actual load error or PCB relay error etc. (This function would be applied at A/S.)
4) Load condition display function will maintain for 30 seconds and then normal condition will be returned automatically.
5) Load condition display is as below. Only the load control LED will blink with 0.5interval in "Display LED"





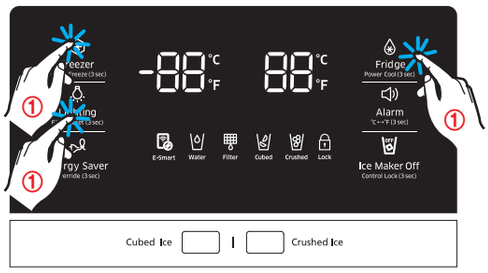
TROUBLESHOOTING

※ Load mode Check list

Display LED	Display contents	Operation contents
R–1–ⓔ	Overload condition	When ambient temperature is more than 93°F(34°C), LED blinks
R–1–ⓕ	Low temperature condition	When ambient temperature is less than 72°F(22°C), LED blinks
R–1–ⓔ,ⓕ (All LED not blink)	Normal Condition	When ambient temperature is between 73°F(23°C) and 91°F(33°C)
R–1–ⓖ	Exhibition Mode	LED blinks at the display mode.
F–1–ⓐ	COMP.	When COMP operates, applicable LED blinks.
F–1–ⓑ	F-FAN High	When FZ compartment FAN operates with high speed, applicable LED blinks.
F–1–ⓒ	F-FAN Low	When FZ compartment FAN operates with low speed, applicable LED blinks.
F–1–ⓓ	F-DEF Heater	When FZ compartment defrost heater operates, LED blinks
F–1–ⓔ	C-FAN High	When compressor FAN operates with high speed, applicable LED blinks.
F–1–ⓕ	C-FAN Low	When compressor FAN operates with low speed, applicable LED blinks.
F–1–ⓖ	Homebar(Door) Heater	When Homebar(Door) heater operates, applicable LED blinks.
R–10–ⓓ	Ice maker full	When the Ice Maker's Bucket is full, applicable LED blinks
F–10–ⓔ	Dispenser Heater	When Dispenser heater operates, applicable LED blinks.
F–10–ⓖ	Damper Open	When damper open, applicable LED blinks.
F–1–ⓑ,ⓒ	F-FAN Highest	When FZ compartment FAN operates with highest speed, applicable LED blinks.

TROUBLESHOOTING

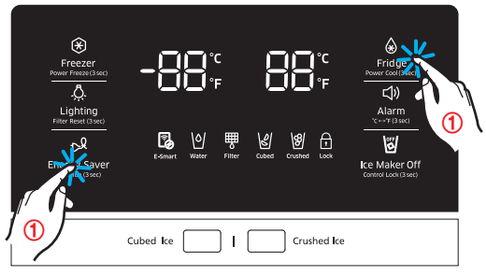
4-1-5. Cooling OFF mode setting function North American(US, Canada) Models Only



① If Freezer Key + Lighting Key + Fridge Key are pressed for 5 seconds, Cooling Off mode will be started.

1) If Freezer Key + Lighting Key + Fridge Key are pressed simultaneously for 5 seconds during normal operation, Cooling Off mode will be started with buzzer sound(ding-ding).
2) If above Freezer Key + Lighting Key + Fridge Key are pressed one more time, Cooling Off mode will be canceled.
3) If Cooling Off mode is selected, blinks "O-FF" on the temperature setting display of the panel and it indicates the refrigerator has entered the Cooling Off mode.
4) During Cooling Off mode, if fresh food and freezer compartments sensors are higher than 149°F (65°C) Cooling Off mode will be canceled automatically and freezing operation will be returned.
   (There is no buzzer sound when the Cooling Off mode is canceled by the temperature)
5) Operation contents of Cooling Off mode
   - Display, Fan motor and etc operate normally, not to operate compressor and Door Open Alarm.
   - Defrost is not operated. (including french heater)
   - Display function of the initial real temperature is finished.
   - Under the condition of Cooling Off mode, Cooling Off mode will be operated when Power On after Power OFF.

4-1-6. AP Mode Function and E-Smart Icon

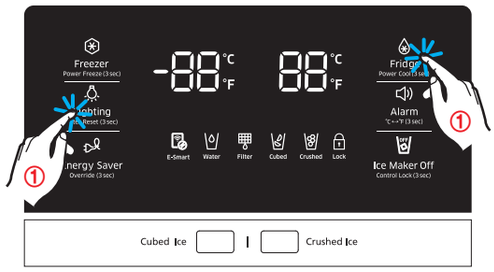


1) AP Mode Function makes refrigerator's status to can be connected to the Network.
2) If you Press for 3 seconds Fridge Key and Energy Saver Key together, AP Mode function is turned on or off.
3) When AP Mode is turned on, the user can connect the refrigerator to the network.
4) E-Smart Icon shows connection status of the refrigerator and network.
5) When turned off the E-Smart Icon, it indicates that any network device is not connected. When turned on the E-Smart Icon, it indicates that the refrigerator is connected to the network or AP device.

4-1-7. Option setting function

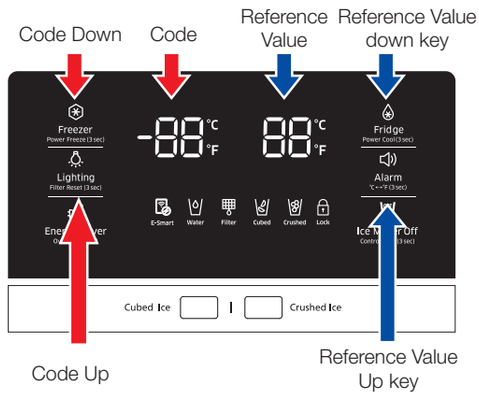
- If Lighting Key + Fridge Key are pressed simultaneously for 12 seconds during normal operation, fresh food and freezer compartments temperature display will be changed to option setting mode.

KEY operation method for changing to option mode



① If Lighting Key + Fridge Key are pressed simultaneously for 12 seconds, option setting mode will be started.

KEY control method after converting to option mode

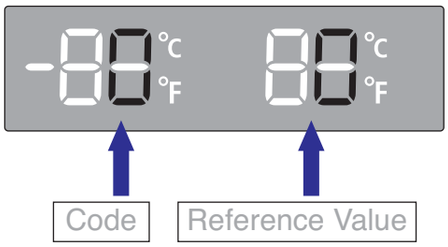


※ Key control in option mode

Freezer Key	Code Down key
Lighting Key	Code Up key
Fridge Key	Reference Value down key
Alarm Key	Reference Value Up key

- If the display changes to option setting mode, all displays will be off except freezer and fridge compartments temperature display as below.
  (Fresh food and freezer compartments case will be explained only because all options are operated with the same method according to the option table.)

TROUBLESHOOTING



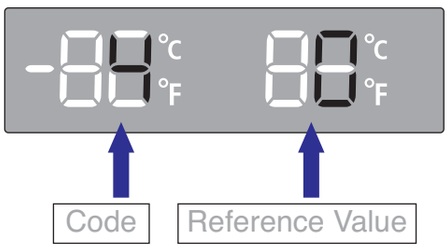
1) For example, if you want to change freezer compartment standard temperature to -4℉(-2°C) by operating option, do as below. This function is for changing the standard temperature.
In -2℉(-19°C) of current temperature of freezer compartment, if you make the temperature lower to -4℉(-2°C) by the option, the standard temperature would be controlled -6℉(-21°C)
Therefore, if you change the setting of temperature option to -2℉(-19°C) on the panel, the appliance will be operated with -6℉(-21°C). It means that standard temperature is controlled -4℉(-2°C) less than setting temperature in the display.

NOTE

Basically, all the data in option has cleared from the factory.
Therefore, almost all setting value are "0".
But, some setting values could be changed for the purpose of improving performance. You need to check the product manual and/or specification.

2) After changing to the option mode, fresh food compartment "0" , freezer compartment "0" will be displayed. (Basically fresh food compartment "0", freezer "0" would be set at shipping process, but setting value could be changed for the purpose of improving product at mass producing process.)
- If fresh food compartment "0" shows only, temperature reference value of freezer compartment will be set and current freezer compartment temperature code will be displayed on the freezer temperature display.

3) If freezer compartment "4" is set as below freezer compartment code after fresh food compartment "0 is set, standard temperature of freezer compartment will be lower than -4℉(-2.0°C).
(Refer to the picture "changing the freezer compartment temperature")



: If you wait for 20 seconds after completing the setting, MICOM will save the setting value to the EEPROM and normal display will be returned and the option setting mode will be canceled.

4) Option changing method as above is the same as all RH22*, RH29* model.
5) By the same method as above, it is possible to control the fresh food compartment temperature, water supply, ice-maker harvest temperature/time, etc.
6) Option function is set in the EEPROM at shipping process in the factory.
You would better not to change the option of your own.
Completing the setting is that option function return to normal display after 20 seconds.
Do not turn off the appliance before returning to the normal display mode.

NOTE

Option setting function exists in the other items.
We will skip the explanation of the other functions by the option because it is associated with refrigerator control function and is not needed at SERVICE.
(Please do not set the other options except above SERVICE Manual.)

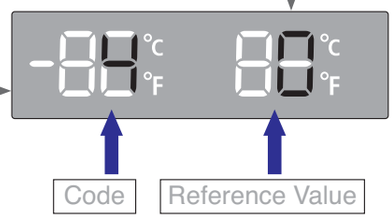
TROUBLESHOOTING

4-1-8. Option TABLE

1) Temperature changing table of freezer compartment

Set item	Freezer Temp Shift
Reference	Fridge Room 7-SEG
Value	0

Setting value	
FZ compartment Code	Temp. compensation
0	0°F(0.0°C)
1	-1°F(-0.5°C)
2	-2°F(-1.0°C)
3	-3°F(-1.5°C)
4	-4°F(-2.0°C)
5	-5°F(-2.5°C)
6	-6°F(-3.0°C)
7	-7°F(-3.5°C)
8	+1°F(+0.5°C)
9	+2°F(+1.0°C)
10	+3°F(+1.5°C)
11	+4°F(+2.0°C)
12	+5°F(+2.5°C)
13	+6°F(+3.0°C)
14	+7°F(+3.5°C)
15	+8°F(+4.0°C)

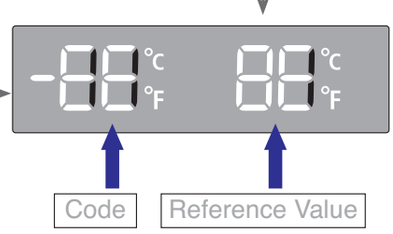


2) Temperature changing table of fresh food compartment

Set item	Fridge Temp Shift
Reference	Fridge Room 7-SEG
Value	1

Setting value	
FZ compartment Code	Temp. compensation
0	0°F(0.0°C)
1	-1°F(-0.5°C)
2	-2°F(-1.0°C)
3	-3°F(-1.5°C)
4	-4°F(-2.0°C)
5	-5°F(-2.5°C)
6	-6°F(-3.0°C)
7	-7°F(-3.5°C)
8	+1°F(+0.5°C)
9	+2°F(+1.0°C)
10	+3°F(+1.5°C)
11	+4°F(+2.0°C)
12	+5°F(+2.5°C)
13	+6°F(+3.0°C)
14	+7°F(+3.5°C)
15	+8°F(+4.0°C)

ex) If you want to change the freezer compartment standard temperature to 4°F(2°C)



3) Ice Tray water supply of freezer compartment Ice Maker

Set item	FZ-Room ICE TRAY
Reference	Fridge Room 7-SEG
Value	3

Setting value	
FZ compartment Code	Water Settings.
0	94cc
1	104cc

4) Eject waiting time changing table of freezer compartment Ice Maker

Set item	FZ-Room Ice Maker Eject waiting time Shift
Reference	Fridge Room 7-SEG
Value	3

Setting value	
FZ compartment Code	Setting time
0	60min
1	47min
2	45min
3	53min
4	55min
5	57min
6	65min
7	70min
8	50min

5) Eject temperature changing table of freezer compartment Ice Maker

Set item	FZ-Room Ice Maker Eject temperature Shift
Reference	Fridge Room 7-SEG
Value	4

Setting value	
FZ compartment Code	Temp. compensation
0	-7.5°C
1	-7.0°C
2	-6.5°C
3	-8.0°C
4	-8.5°C
5	-9.0°C
6	-9.5°C
7	-10.0°C

6-1) Minimum Comp RPM shifting

-This option is rising minimum Comp RPM. As this option is applied, Comp operation.

Set item	Minimum Comp RPM setting
Reference	Fridge Room 7-SEG
Value	12

Setting value	
FZ compartment Code	Comp RPM
0	No RPM Change
1	Minimum 2450RPM
2	Minimum 2450RPM
3	Minimum 2450RPM

6-2) Minimum Comp RPM shifting – For E-Cost

-This option is rising minimum Comp RPM. As this option is applied, Comp operation.

Set item	Minimum Comp RPM setting
Reference	Fridge Room 7-SEG
Value	12

Setting value	
FZ compartment Code	Comp RPM
0	No RPM Change
1	Minimum 2050RPM
2	Minimum 2050RPM
3	Minimum 2050RPM

7) Temp Display Option

-This option is for temp display all on mode. If user wants temp display always on, this option is solution.

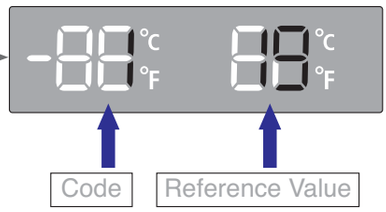
Set item	Temp Display Option
Reference	Fridge Room 7-SEG
Value	16

Setting value	
FZ compartment Code	Temp Display Option
0	Normal Display (Temp display temporally on at use)
1	Always Temp Display On
2	Always Temp Display On

8) Operation rate changing table of dispenser heater

Set item	Dispenser Heater Rate
Reference	Fridge Room 7-SEG
Value	19

Setting value	
FZ compartment Code	Rate change
0	+0.0%
1	+ 20% operation (up to 100%)



Code | Reference Value

ex) If you want to change the dispenser heater operation rate to +20%

TROUBLESHOOTING

4-2. Diagnostic method according to the trouble symptom(Flow Chart)

DATA1.Temperature table
Resistance value and MICOM port voltage of sensor according to the temperature
SENSOR CHIP : based on PX41C, PX41C, 502AT/ 103**(ICE MAKER SENSOR(MOLD)/FULL UP, 20Kohm
(Actual measurement = value of the table below X 2)

℃	℉	Voltage	Resistance	℃	℉	Voltage	Resistance	℃	℉	Voltage	Resistance
-50	-58	4.694	153319	-5	23	3.107	16419	40	104	1.153	2997
-49	-56.2	4.677	144794	-4	24.8	3.057	15731	41	105.8	1.124	2899
-48	-54.4	4.659	136798	-3	26.6	3.006	15076	42	107.6	1.095	2805
-47	-52.6	4.641	129294	-2	28.4	2.955	14452	43	109.4	1.068	2714
-46	-50.8	4.622	122248	-1	30.2	2.904	13857	44	111.2	1.040	2627
-45	-49	4.602	115631	0	32	2.853	13290	45	113	1.014	2543
-44	-47.2	4.581	109413	1	33.8	2.802	12749	46	114.8	0.988	2462
-43	-45.4	4.560	103569	2	35.6	2.751	12233	47	116.6	0.963	2384
-42	-43.6	4.537	98073	3	37.4	2.700	11741	48	118.4	0.938	2309
-41	-41.8	4.514	92903	4	39.2	2.649	11271	49	120.2	0.914	2237
-40	-40	4.490	88037	5	41	2.599	10823	50	122	0.891	2167
-39	-38.2	4.465	83456	6	42.8	2.548	10395	51	123.8	0.868	2100
-38	-36.4	4.439	79142	7	44.6	2.498	9986	52	125.6	0.846	2036
-37	-34.6	4.412	75077	8	46.4	2.449	9596	53	127.4	0.824	1973
-36	-32.8	4.385	71246	9	48.2	2.399	9223	54	129.2	0.803	1913
-35	-31	4.356	67634	10	50	2.350	8867	55	131	0.783	1855
-34	-29.2	4.326	64227	11	51.8	2.301	8526	56	132.8	0.762	1799
-33	-27.4	4.296	61012	12	53.6	2.253	8200	57	134.6	0.743	1745
-32	-25.6	4.264	57977	13	55.4	2.205	7888	58	136.4	0.724	1693
-31	-23.8	4.232	55112	14	57.2	2.158	7590	59	138.2	0.706	1642
-30	-22	4.199	52406	15	59	2.111	7305	60	140	0.688	1594
-29	-20.2	4.165	49848	16	60.8	2.064	7032	61	141.8	0.670	1547
-28	-18.4	4.129	47431	17	62.6	2.019	6771	62	143.6	0.653	1502
-27	-16.6	4.093	45146	18	64.4	1.974	6521	63	145.4	0.636	1458
-26	-14.8	4.056	42984	19	66.2	1.929	6281	64	147.2	0.620	1416
-25	-13	4.018	40938	20	68	1.885	6052	65	149	0.604	1375
-24	-11.2	3.980	39002	21	69.8	1.842	5832	66	150.8	0.589	1335
-23	-9.4	3.940	37169	22	71.6	1.799	5621	67	152.6	0.574	1297
-22	-7.6	3.899	35433	23	73.4	1.757	5419	68	154.4	0.560	1260
-21	-5.8	3.858	33788	24	75.2	1.716	5225	69	156.2	0.546	1225
-20	-4	3.816	32230	25	77	1.675	5039	70	158	0.532	1190
-19	-2.2	3.773	30752	26	78.8	1.636	4861	71	159.8	0.519	1157
-18	-0.4	3.729	29350	27	80.6	1.596	4690	72	161.6	0.506	1125
-17	1.4	3.685	28021	28	82.4	1.558	4526	73	163.4	0.493	1093
-16	3.2	3.640	26760	29	84.2	1.520	4369	74	165.2	0.481	1063
-15	5	3.594	25562	30	86	1.483	4218	75	167	0.469	1034
-14	6.8	3.548	24425	31	87.8	1.447	4072	76	168.8	0.457	1006
-13	8.6	3.501	23345	32	89.6	1.412	3933	77	170.6	0.446	978
-12	10.4	3.453	22320	33	91.4	1.377	3799	78	172.4	0.435	952
-11	12.2	3.405	21345	34	93.2	1.343	3670	79	174.2	0.424	926
-10	14	3.356	20418	35	95	1.309	3547	80	176	0.414	902
-9	15.8	3.307	19537	36	96.8	1.277	3428	81	177.8	0.404	877
-8	17.6	3.258	18698	37	98.6	1.253	3344	82	179.6	0.394	854
-7	19.4	3.208	17901	38	100.4	1.213	3204	83	181.4	0.384	832
-6	21.2	3.158	17142	39	102.2	1.183	3098	84	183.2	0.375	810

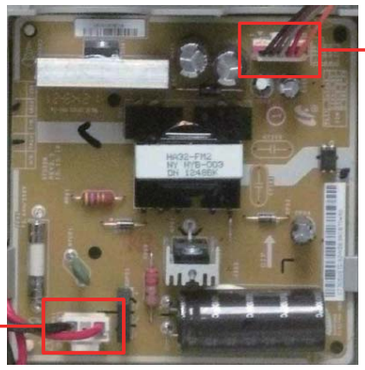
TROUBLESHOOTING

DATA2. Humidity Sensor table
- Voltage output table @23°…, 5Vdc --- HTG3515CH/HTG3535CH
RH(Temperature compensate) = RH (Relative Humidity) + (Temp(°C) °© 23°C) x 0.05

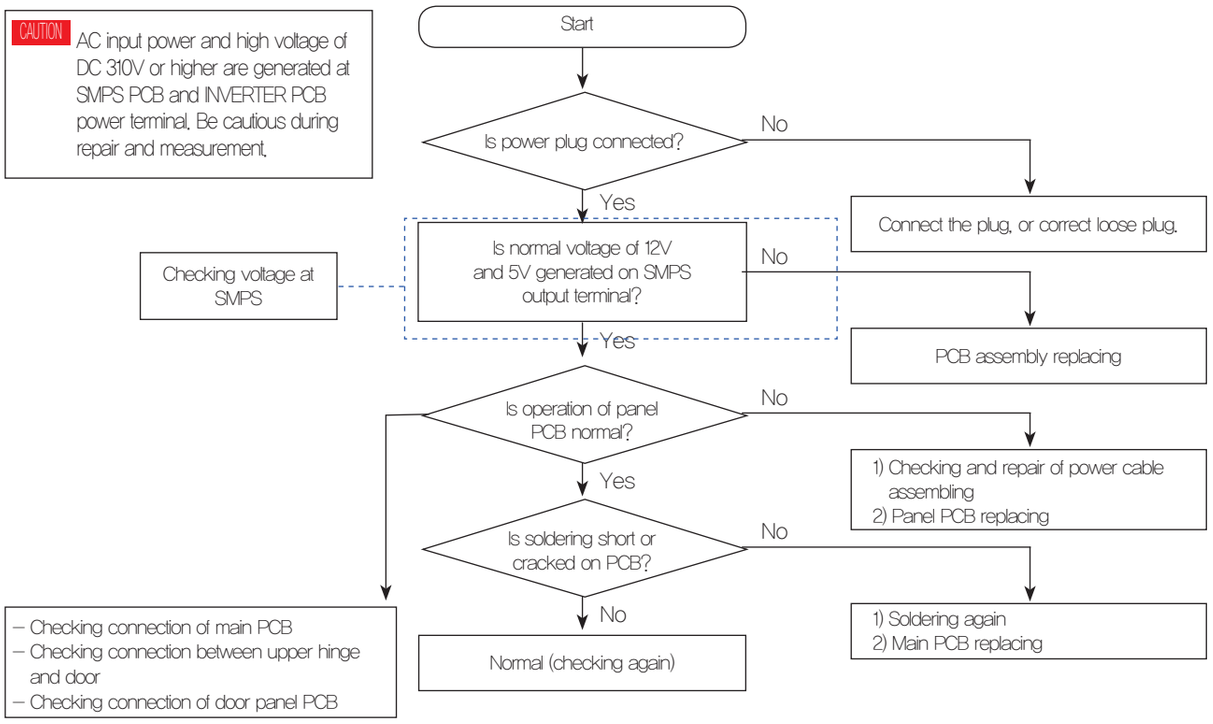
℃	℉	Voltage	Resistance	℃	℉	Voltage	Resistance	℃	℉	Voltage	Resistance
0	909	186	744	46	2246	460	1839	92	3452	706	2827
1	943	193	772	47	2272	465	1861	93	3478	712	2848
2	977	200	800	48	2298	470	1882	94	3504	717	2870
3	1010	207	827	49	2324	475	1903	95	3530	722	2891
4	1043	213	854	50	2350	481	1925	96	3566	730	2920
5	1076	220	881	51	2376	486	1946	97	3595	735	2944
6	1109	227	908	52	2402	491	1967	98	3624	741	2968
7	1141	233	935	53	2428	497	1989	99	3653	747	2992
8	1173	240	961	54	2454	502	2010	100	3683	754	3016
9	1205	247	987	55	2480	507	2031				
10	1235	253	1011	56	2505	513	2052				
11	1266	259	1037	57	2530	518	2072				
12	1297	265	1062	58	2555	523	2093				
13	1328	272	1088	59	2580	528	2113				
14	1359	278	1113	60	2605	533	2133				
15	1390	284	1138	61	2630	538	2154				
16	1420	291	1163	62	2655	543	2174				
17	1450	297	1188	63	2680	548	2195				
18	1480	303	1212	64	2705	553	2215				
19	1510	309	1237	65	2730	559	2236				
20	1540	315	1261	66	2756	564	2257				
21	1569	321	1285	67	2782	569	2278				
22	1598	327	1309	68	2808	575	2300				
23	1627	333	1333	69	2834	580	2321				
24	1656	339	1356	70	2860	585	2342				
25	1685	345	1380	71	2886	590	2364				
26	1713	350	1403	72	2912	596	2385				
27	1741	356	1426	73	2938	601	2406				
28	1769	362	1449	74	2964	606	2428				
29	1797	368	1472	75	2990	612	2449				
30	1825	373	1495	76	3017	617	2471				
31	1852	379	1517	77	3044	623	2493				
32	1879	384	1539	78	3071	628	2515				
33	1906	390	1561	79	3098	634	2537				
34	1933	395	1583	80	3125	639	2559				
35	1960	401	1605	81	3152	645	2581				
36	1986	406	1627	82	3179	650	2604				
37	2012	412	1648	83	3206	656	2626				
38	2038	417	1669	84	3233	661	2648				
39	2064	422	1690	85	3260	667	2670				
40	2090	428	1712	86	3288	673	2693				
41	2116	433	1733	87	3316	678	2716				
42	2142	438	1754	88	3344	684	2739				
43	2168	444	1776	89	3372	690	2762				
44	2194	449	1797	90	3400	696	2785				
45	2220	454	1818	91	3426	701	2806				

TROUBLESHOOTING

4-2-1. Power Not Supplied (SMPS PCB)

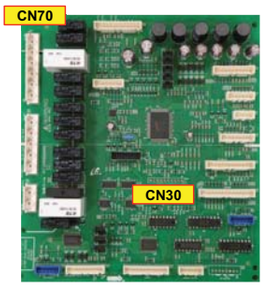


CAUTION AC input power and high voltage of DC 310V or higher are generated at SMPS PCB and INVERTER PCB power terminal. Be cautious during repair and measurement.


Start
Is power plug connected?
No
Connect the plug, or correct loose plug.
Yes
Checking voltage at SMPS
Is normal voltage of 12V and 5V generated on SMPS output terminal?
No
PCB assembly replacing
Yes
Is operation of panel PCB normal?
No
1) Checking and repair of power cable assembling
2) Panel PCB replacing
Yes
Is soldering short or cracked on PCB?
No
1) Soldering again
2) Main PCB replacing
No
– Checking connection of main PCB
– Checking connection between upper hinge and door
– Checking connection of door panel PCB
Normal (checking again)

TROUBLESHOOTING

4-2-2. Unable to Defrost

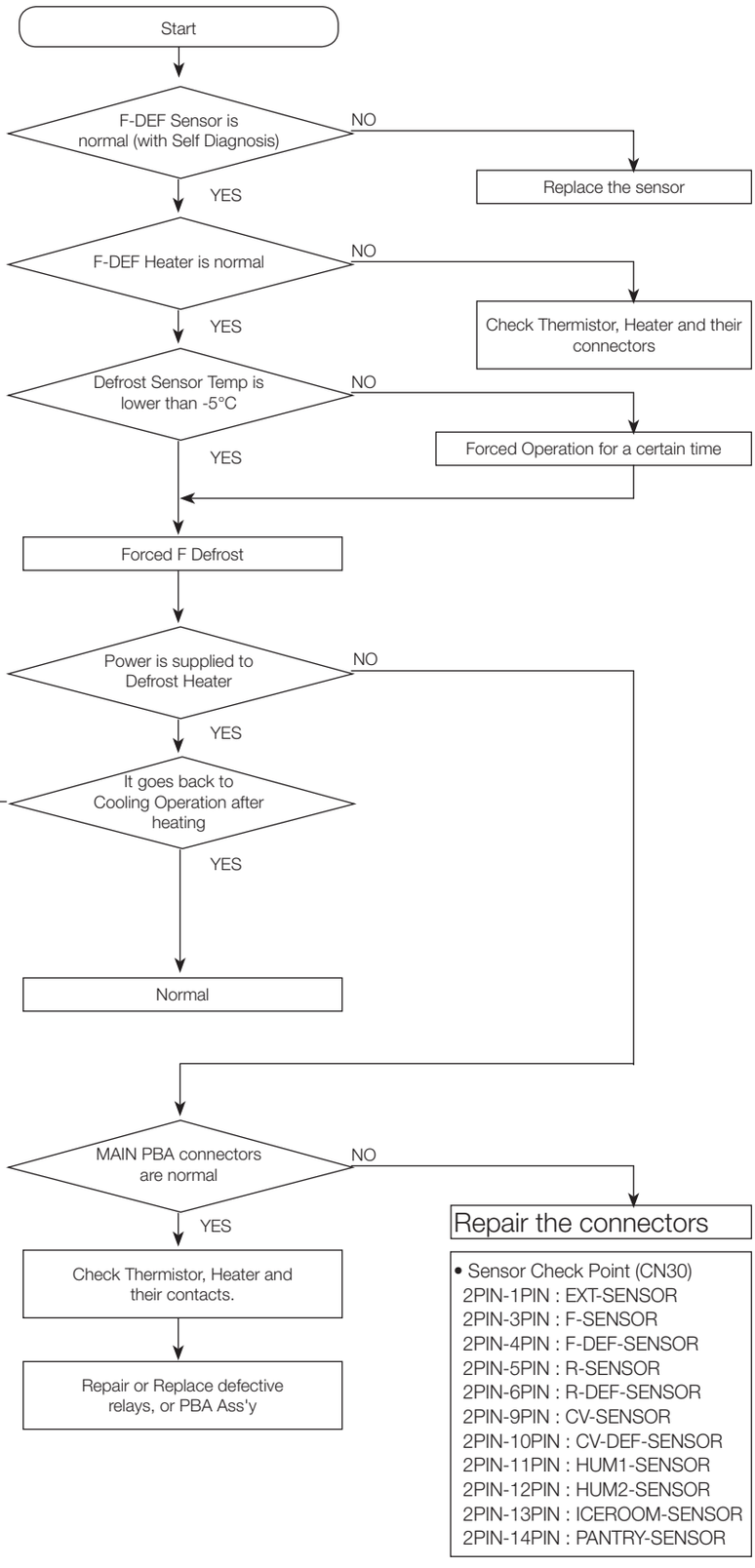


F-DEF-HEATER : Read resistance between MAIN PBA CN70 #9 and SMPS PBA CN01 #3

Defrost Sensor Voltage is lower than 3.1V

Press the Power Freeze and the Fridge buttons at the same time for 8 sec and then go into the 2nd Test Mode.

F-DEF-SENSOR : Read resistance between CN30 #3 and #7

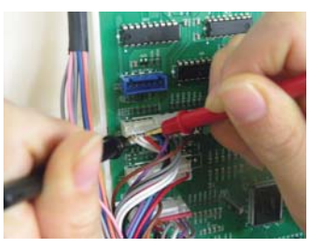


Note

When F-DEF Sensor is higher than +10℃ and +17℃, it will stop heating and go back to Cooling Operation.

☞ Checking method of voltage for F-DEF-Sensor

- Check the voltage of **Sensor check point #5 –> CN30 #2 and #4** on the PBA
- **Compare it with the temperature table after measurement. (same method is applied to other sensor)**



Repair the connectors

- Sensor Check Point (CN30)
  2PIN-1PIN : EXT-SENSOR
  2PIN-3PIN : F-SENSOR
  2PIN-4PIN : F-DEF-SENSOR
  2PIN-5PIN : R-SENSOR
  2PIN-6PIN : R-DEF-SENSOR
  2PIN-9PIN : CV-SENSOR
  2PIN-10PIN : CV-DEF-SENSOR
  2PIN-11PIN : HUM1-SENSOR
  2PIN-12PIN : HUM2-SENSOR
  2PIN-13PIN : ICEROOM-SENSOR
  2PIN-14PIN : PANTRY-SENSOR

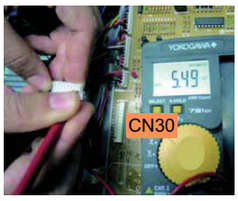
4-2-3. Self-Diagnosis Error (Defective Sensor)

When there is sensor error, display panel show that. When it occurs during the initial power on time, display panel keeps blinking relevant 7-SEG and the refrigerator go into the emergency operation mode. Under the emergency operation mode, the refrigerator can not do its normal operation. So check out with the Self Diagnosis in this manual.

1) When the Ambient Sensor is defective,

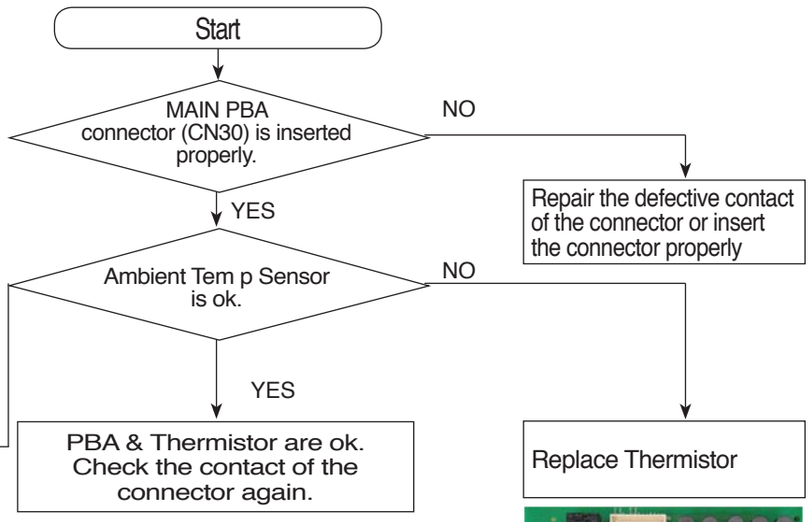
☞ Checking method of resistance for EXT-Sensor

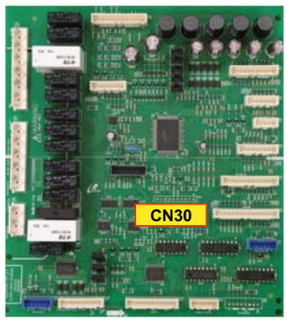
- Compare the temperature table after measurement (same method is applied to other sensors)



Ambient-Sensor : Read the resistance between CN30 #1 and #2

Compare the room temp. with sensed temp. using Temp-Resistance Table.

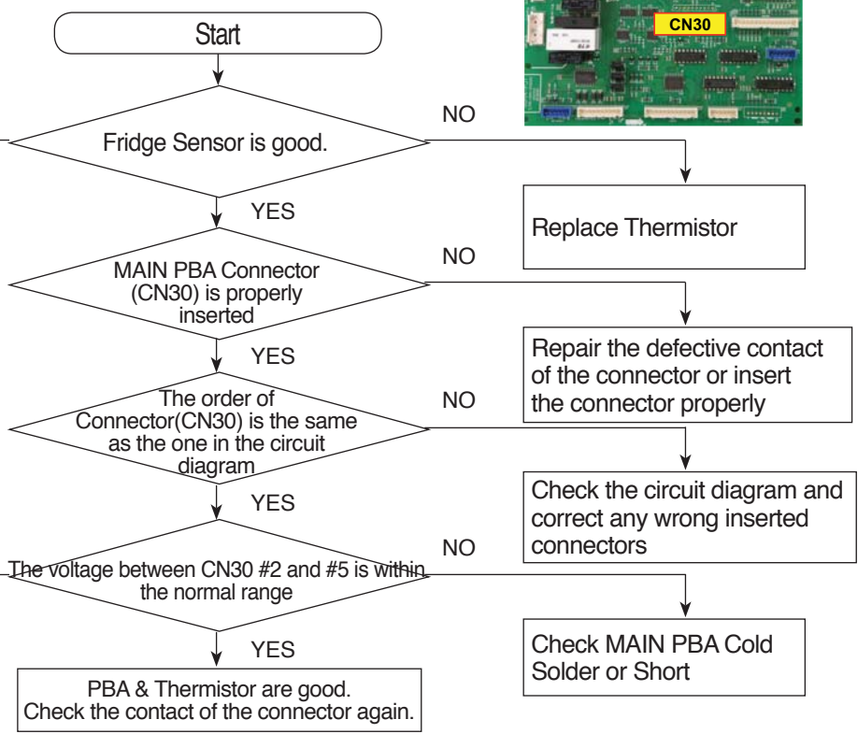

Start
MAIN PBA connector (CN30) is inserted properly.
NO
Repair the defective contact of the connector or insert the connector properly
YES
Ambient Tem p Sensor is ok.
NO
YES
PBA & Thermistor are ok. Check the contact of the connector again.
Replace Thermistor



2) When the Fridge Temp Sensor is defective (also applied to other sensors)

Refer to Circuit Diagram and Temp Sensor Troubleshooting in this manual.

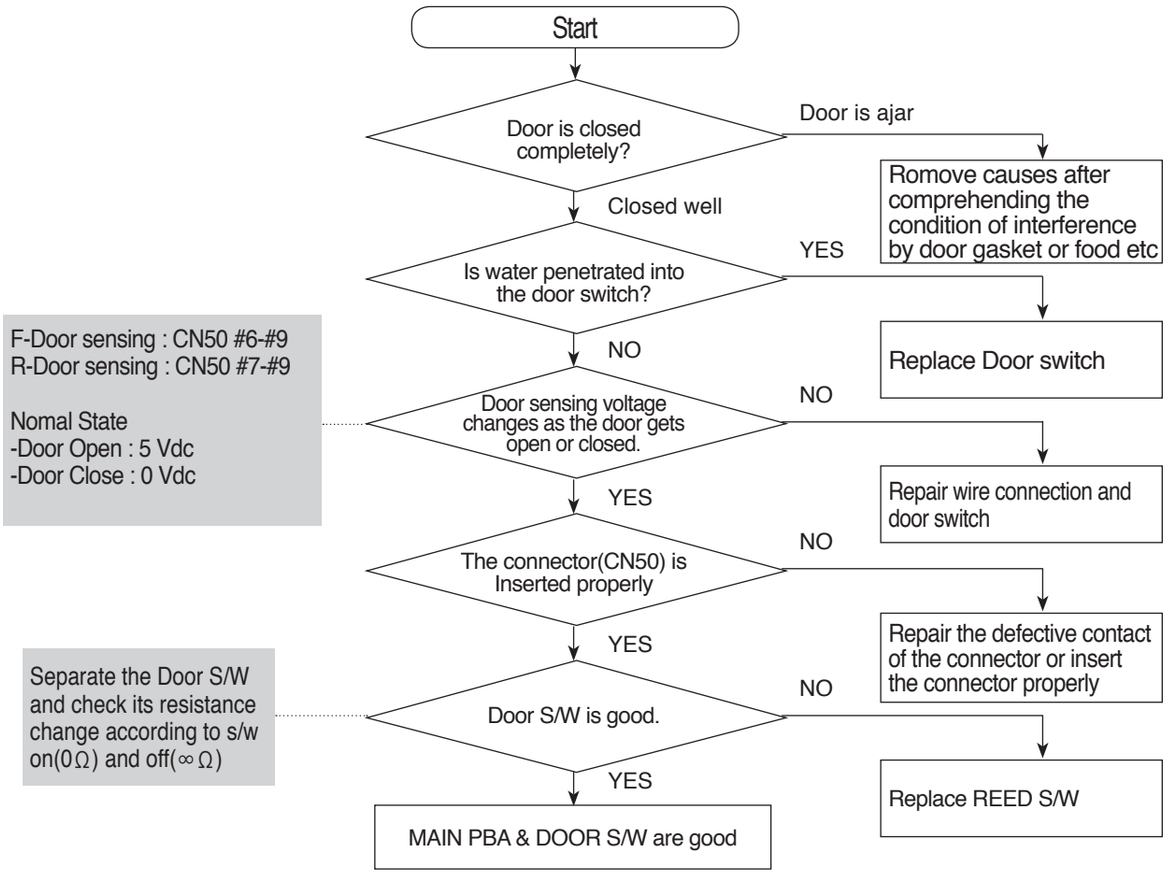
Refer to Circuit Diagram and Temp Sensor Troubleshooting in this manual.


Start
Fridge Sensor is good.
NO
Replace Thermistor
YES
MAIN PBA Connector (CN30) is properly inserted
NO
Repair the defective contact of the connector or insert the connector properly
YES
The order of Connector(CN30) is the same as the one in the circuit diagram
NO
Check the circuit diagram and correct any wrong inserted connectors
YES
The voltage between CN30 #2 and #5 is within the normal range
NO
Check MAIN PBA Cold Solder or Short
YES
PBA & Thermistor are good. Check the contact of the connector again.

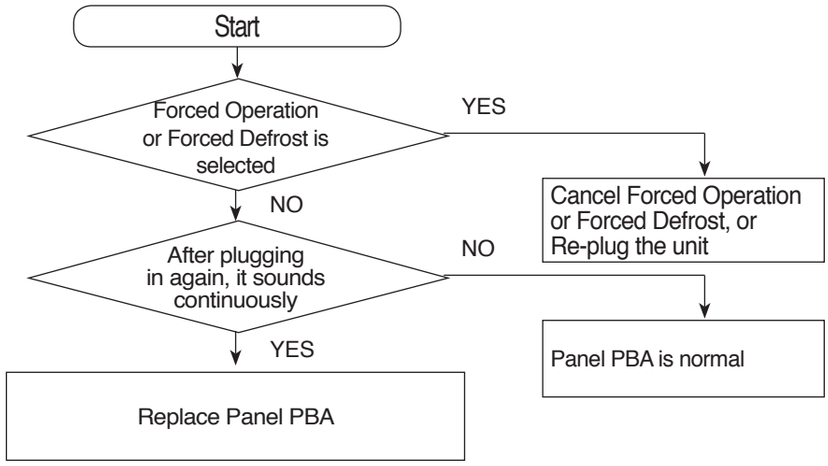
TROUBLESHOOTING

4-2-4. When Alarm Sound continues (Buzzer Sound)

1) When "DingDong" sound continues


Start
Door is closed completely?
Door is ajar
Romove causes after comprehending the condition of interference by door gasket or food etc
Closed well
Is water penetrated into the door switch?
YES
Replace Door switch
NO
F-Door sensing : CN50 #6-#9
R-Door sensing : CN50 #7-#9
Nomal State
-Door Open : 5 Vdc
-Door Close : 0 Vdc
Door sensing voltage changes as the door gets open or closed.
NO
Repair wire connection and door switch
YES
The connector(CN50) is Inserted properly
NO
Repair the defective contact of the connector or insert the connector properly
YES
Separate the Door S/W and check its resistance change according to s/w on(0Ω) and off(∞Ω)
Door S/W is good.
NO
Replace REED S/W
YES
MAIN PBA & DOOR S/W are good

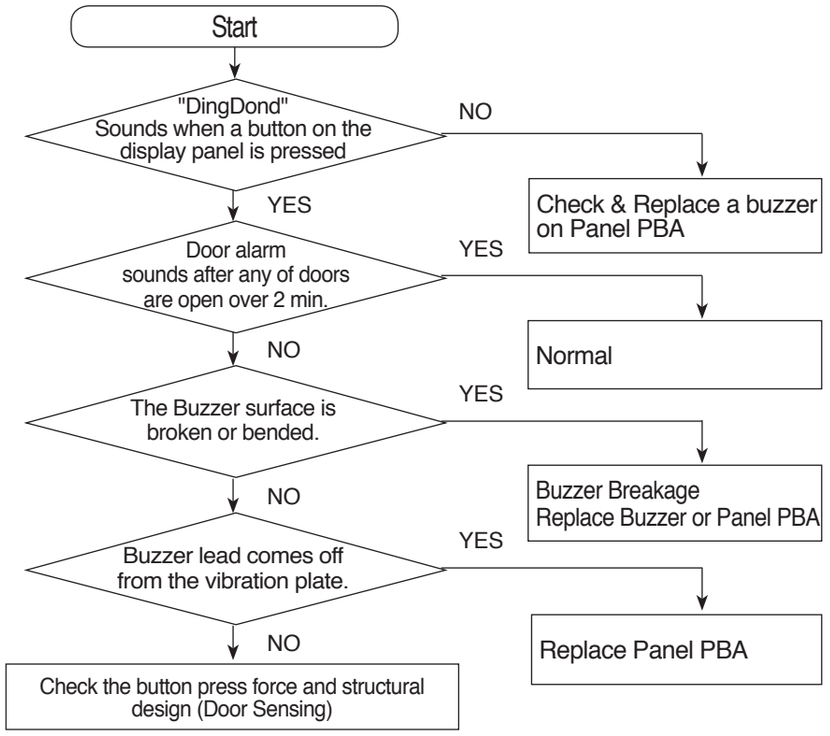
2) When "Beeping" sound continues



3) If a buzzer does not sound

This model has a buzzer on the Panel PBA. If the buzzer does not sounds when button is pressed, Forced Operation, door open and disconnection with Main PBA, check out defective soldering on PBA or buzzer damage. (It is recommended replacing Panel PBA if components are damaged)

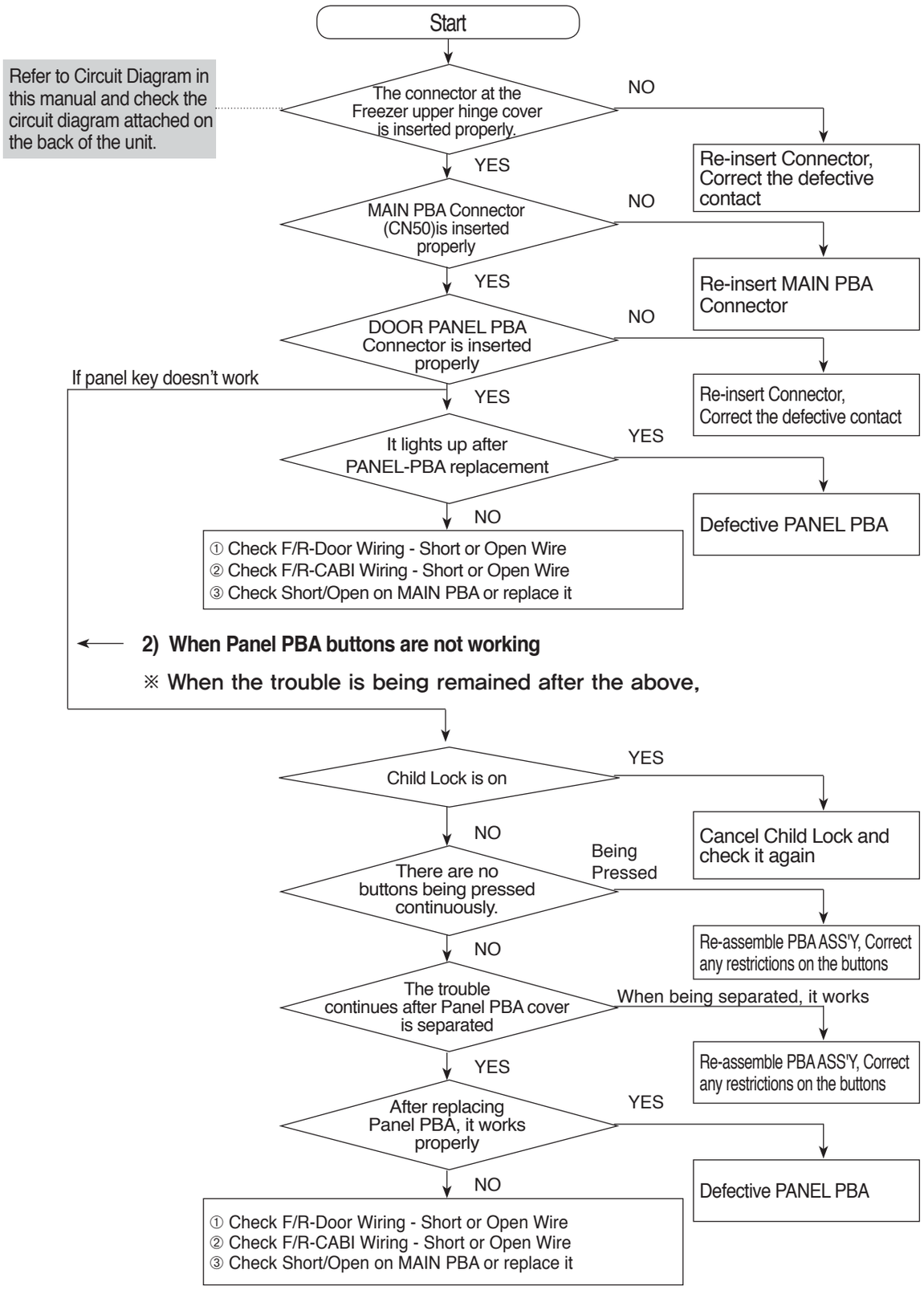
※ It could be unable to hear in case there is heavy noise or built-in environment.



TROUBLESHOOTING

4-2-5. When PANEL PBA operates abnormally

1) When PANEL PBA does not light up or partially does


Start
Refer to Circuit Diagram in this manual and check the circuit diagram attached on the back of the unit.
The connector at the Freezer upper hinge cover is inserted properly.
NO
Re-insert Connector, Correct the defective contact
YES
MAIN PBA Connector (CN50)is inserted properly
NO
Re-insert MAIN PBA Connector
YES
DOOR PANEL PBA Connector is inserted properly
NO
Re-insert Connector, Correct the defective contact
If panel key doesn't work
YES
It lights up after PANEL-PBA replacement
YES
Defective PANEL PBA
NO
① Check F/R-Door Wiring - Short or Open Wire
② Check F/R-CABI Wiring - Short or Open Wire
③ Check Short/Open on MAIN PBA or replace it

2) When Panel PBA buttons are not working

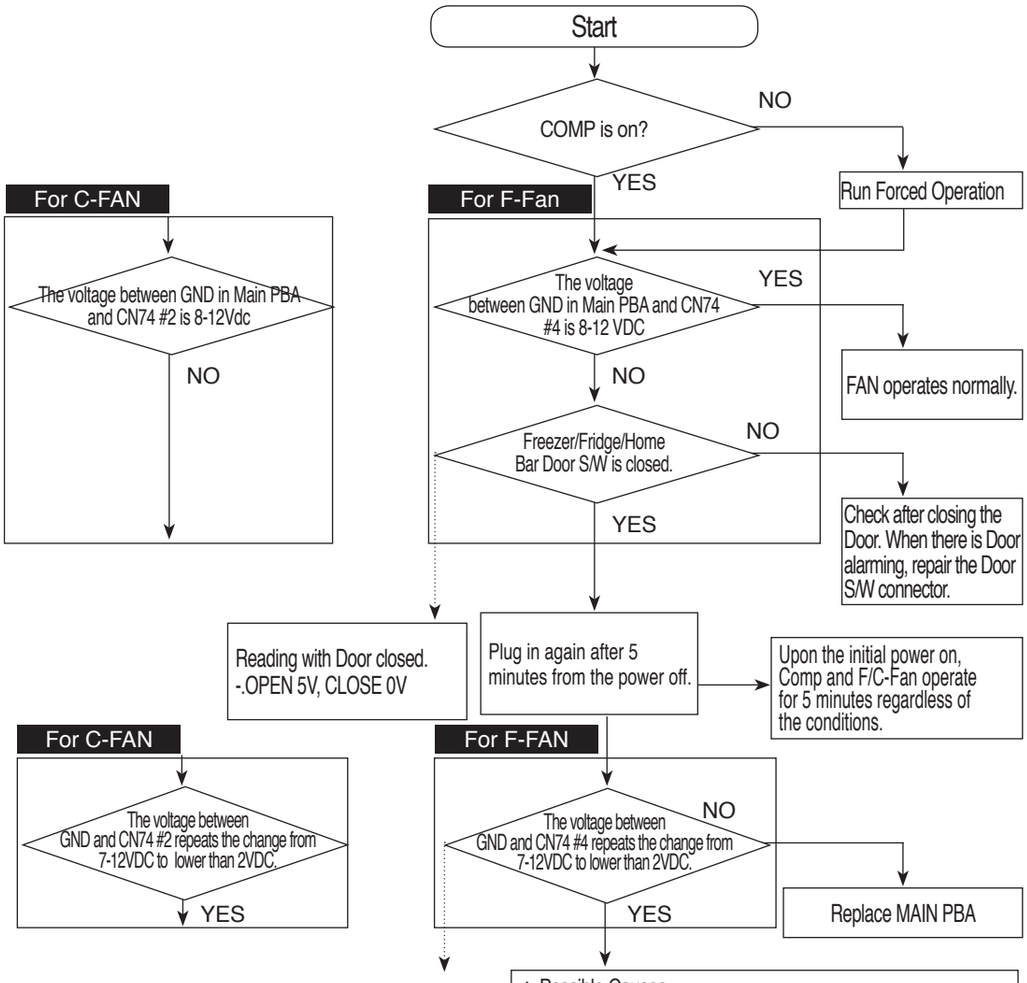
※ When the trouble is being remained after the above,

Child Lock is on
YES
Cancel Child Lock and check it again
NO
There are no buttons being pressed continuously.
Being Pressed
Re-assemble PBA ASS'Y, Correct any restrictions on the buttons
NO
The trouble continues after Panel PBA cover is separated
When being separated, it works
Re-assemble PBA ASS'Y, Correct any restrictions on the buttons
YES
After replacing Panel PBA, it works properly
YES
Defective PANEL PBA
NO
① Check F/R-Door Wiring - Short or Open Wire
② Check F/R-CABI Wiring - Short or Open Wire
③ Check Short/Open on MAIN PBA or replace it

TROUBLESHOOTING

4-2-6. When Fan does not operate

- This model has BLDC FAN motor. BLDC motor is driven by DC7~12V
- F-Fan motor usually runs together with the Compressor. Once the door is open and closed at high ambient temperature, F-Fan motor put off its operation for one minute. Therefore, you are advised not to take it as an error.
- When fridge door is open, the F-Fan motor stops.

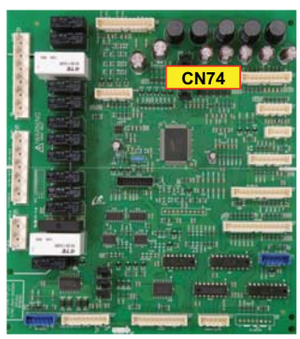

Start
COMP is on?
NO
YES
Run Forced Operation
For C-FAN
The voltage between GND in Main PBA and CN74 #2 is 8-12Vdc
NO
For F-Fan
The voltage between GND in Main PBA and CN74 #4 is 8-12 VDC
YES
NO
FAN operates normally.
Freezer/Fridge/Home Bar Door S/W is closed.
NO
YES
Check after closing the Door. When there is Door alarming, repair the Door S/W connector.
Reading with Door closed. -.OPEN 5V, CLOSE 0V
Plug in again after 5 minutes from the power off.
Upon the initial power on, Comp and F/C-Fan operate for 5 minutes regardless of the conditions.
For C-FAN
The voltage between GND and CN74 #2 repeats the change from 7-12VDC to lower than 2VDC.
YES
For F-FAN
The voltage between GND and CN74 #4 repeats the change from 7-12VDC to lower than 2VDC.
NO
YES
Replace MAIN PBA

Note

Pulse signal(FG) generated from the Fan motor rotation is transmitted through CN74 #9(F), #11(C) Micom senses these signal.
If Micom senses no signal, Micom make Fan Motor stop for 10 sec and try to operate it again.
Micom keeps doing the same procedure 4 times until Micom receive the signal.
If it still fails, MICOM stop trying for 10 minutes.
This procedure prevents the motor from overload when foreign substances such as ice built up around the motor restrict motor rotation.

♦ Possible Causes
1. Defective FAN-MOTOR
2. Contact problem at the terminal
3. FG signal error (Refer to Fan-Motor circuit in this manual)

☞ Checking method of C-Fan motor voltage
-. Read the voltage between MAIN PBA GND and CN74 #2
-. If it has 8~12 voltage, It's normal.
(Same method is applied to other Fan Motor)



TROUBLESHOOTING

4-2-7. When the internal lamp of the freezer/fridge does not light up

Model with light bulb applied

Caution

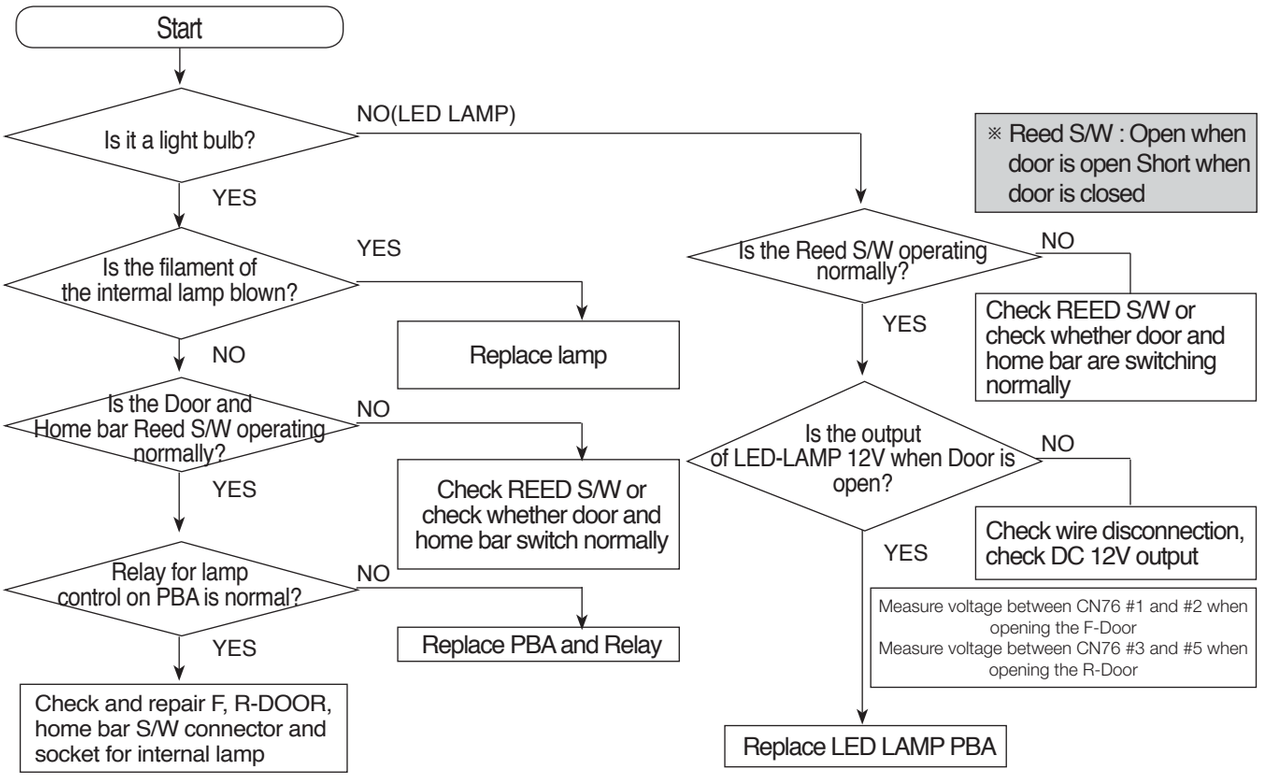
1. Turn off the power for repair because there is risk of electric shock when replacing the internal lamp.
2. Please keep in mind you could get burnt by the excessive heating of an incandescent light bulb.

Reference

Internal lamp RELAY switches ON/OFF as the DOOR is OPEN/CLOSE.
When the internal lamp is not on, check the operating noise of the RELAY.
RELAY operation noise is generated every time as the DOOR is OPEN/CLOSE.

Reference

1. When the DOOR is open, the DOOR S/W becomes OPEN. Micom senses 5V from Door S/W and recognizes that the Door is open. If 5V has sensed for more than 2 minutes, buzzer will sounds “DingDong” every 1 minute. Therefore, if the DOOR S/W is defective, it can generate the “Ding Dong” sound every 1 minute.
2. ON/OFF control of the internal lamp is linked with the DOOR S/W.

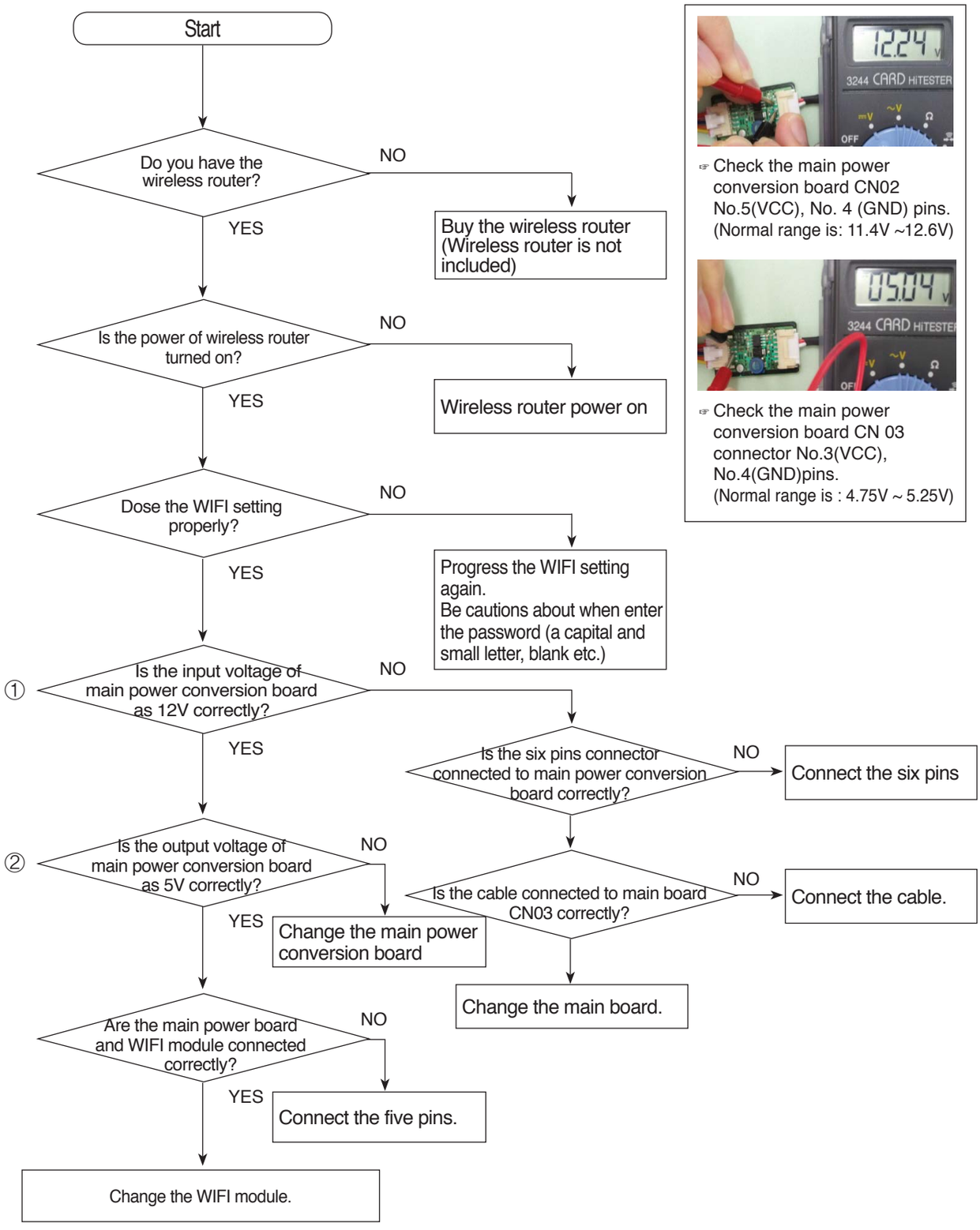

Start
Is it a light bulb?
NO(LED LAMP)
YES
※ Reed S/W : Open when door is open Short when door is closed
Is the filament of the intermal lamp blown?
YES
Replace lamp
NO
Is the Door and Home bar Reed S/W operating normally?
NO
Check REED S/W or check whether door and home bar switch normally
YES
Relay for lamp control on PBA is normal?
NO
Replace PBA and Relay
YES
Check and repair F, R-DOOR, home bar S/W connector and socket for internal lamp
Is the Reed S/W operating normally?
NO
Check REED S/W or check whether door and home bar are switching normally
YES
Is the output of LED-LAMP 12V when Door is open?
NO
Check wire disconnection, check DC 12V output
YES
Measure voltage between CN76 #1 and #2 when opening the F-Door
Measure voltage between CN76 #3 and #5 when opening the R-Door
Replace LED LAMP PBA

〈Light bulb control method〉

	Fridge internal lamp	Freezer internal lamp
Model with light bulb applied	On : Fridge door is open or Fridge HomBar is open	On : Freezer door is open or Freezer HomBar is open

TROUBLESHOOTING

4-2-8. When the WiFi does not work properly


Start
Do you have the wireless router?
NO
Buy the wireless router (Wireless router is not included)
YES
Is the power of wireless router turned on?
NO
Wireless router power on
YES
Dose the WIFI setting properly?
NO
Progress the WIFI setting again. Be cautions about when enter the password (a capital and small letter, blank etc.)
YES
① Is the input voltage of main power conversion board as 12V correctly?
NO
Is the six pins connector connected to main power conversion board correctly?
NO
Connect the six pins
YES
② Is the output voltage of main power conversion board as 5V correctly?
NO
Is the cable connected to main board CN03 correctly?
NO
Connect the cable.
YES
Change the main power conversion board
Change the main board.
Are the main power board and WIFI module connected correctly?
NO
YES
Connect the five pins.
Change the WIFI module.

☞ Check the main power conversion board CN02 No.5(VCC), No. 4 (GND) pins. (Normal range is: 11.4V ~12.6V)

☞ Check the main power conversion board CN 03 connector No.3(VCC), No.4(GND)pins. (Normal range is : 4.75V ~ 5.25V)

TROUBLESHOOTING

4-2-9. Check the WiFi module system

PROBLEM	STATE 1	STATE 2	EXPECTATION CAUSE	SOLUTION
Remote control is not working.	The refrigerator can not search in the APP which is wants to remote control	E-Smart LED OFF	WiFi setting is failed.	Progress the WiFi setting again.
			Select the wrong wireless router.	Select the wireless router which is connected with Smart mobile.
			Password is wrong.	Enter the password correctly.
		E-Smart LED ON	Select the wrong wireless router.	Select the wireless router which is connected with Smart mobile.
			Wireless router is failed to connect with Smart mobile or area where is not working the wireless internet.	Check the smart mobile is connected to wireless router properly which is connected with refrigerator.

TROUBLESHOOTING

4-2-10. LED blinking frequency depending on protecting functions

If Failure Condition is detected during compressor is operating, immediately stop Compressor operating and stand by 5 minutes. During this 5 minutes, RPM command signal is not available. It means, even if available RPM command signal is applied to the compressor, it does not work and keep standing by.

Blinking time is 1 second and dwell time is 2 seconds.

LED Blinking Frequency	Protecting Functions	Remarks
	Normal Operation	N/A
	Starting Failure	1. Short between COMP U,V and W Phase (CN102) 2. Short among IPM Pins (No. #1 ~ 26) 3. Drop the IPM operating Voltage under DC 13.5V 4. Other cases, check the COMP, cycle, etc.
	IPM Fault	
	Abnormal Current Detection	1. Open the COMP wire (CN102) 2. Bad condition of R1(ex. Bad soldering) 3. Other cases, check the COMP, cycle, etc.
	Motor Locked / Over RPM	1. Operating the locked rotor COMP within 5 second. 2. Operating the COMP under 1,000 RPM more than 5 second. 3. Occur the huge change of input voltage in a moment. 4. Other cases, check the COMP, cycle, etc.
	Under Voltage	1. Drop the input voltage under AC 53V 2. Short resistor R525 (DC link Resistor)
	Over Voltage	1. Increase the input voltage over AC 155V 2. Short resistor among R522, R523 and R524 (DC Link Resistor)
	Communication Error	1. Check Terminal CN103 2. Short or Open resistor R210, R212 3. Short or Open harness between Main and Inverter

LED blinking frequency depending on protecting functions
If the same blinking, After 5 minutes, Follow the Remarks

5. PCB DIAGRAM

5-1. PBA Layout with part position 76
5-2. PBA Layout with part position (Inverter Board) 77
5-3. Connector Layout with part position (Main Board) 78
5-4. Connector Layout with part position (Inverter Board) 79

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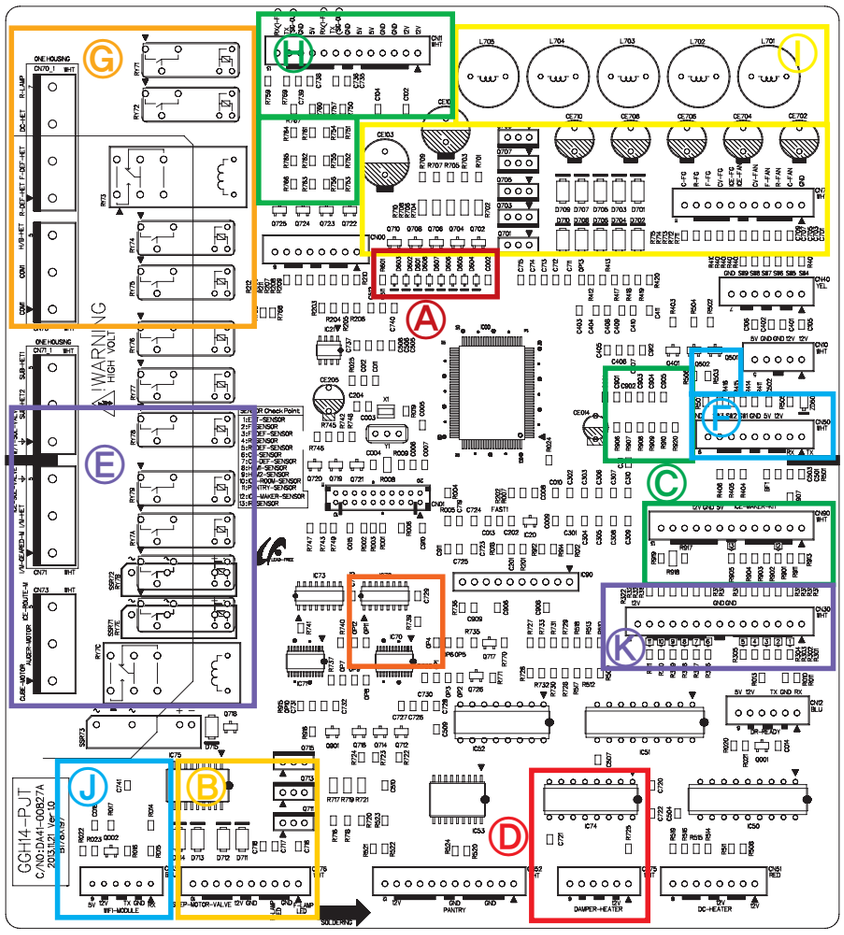
PCB DIAGRAM

5-1. PBA Layout with part position



A. Diode option setting
B. Step valve & LED Room lamp controlling circuit
C. Ice maker kit control
D. Damper & Damper heater control
E. dispenser controlling part
F. Panel PBA communication and power supply circuit
G. Defrost Heater controlling part
H. Inverter Comp driving signal section
I. Fan Motor driving circuit : It supplies to various types of motors
J. WIFI Communication circuit
K. By receiving various sensor signals, it sends them to MICOM after removing noise.

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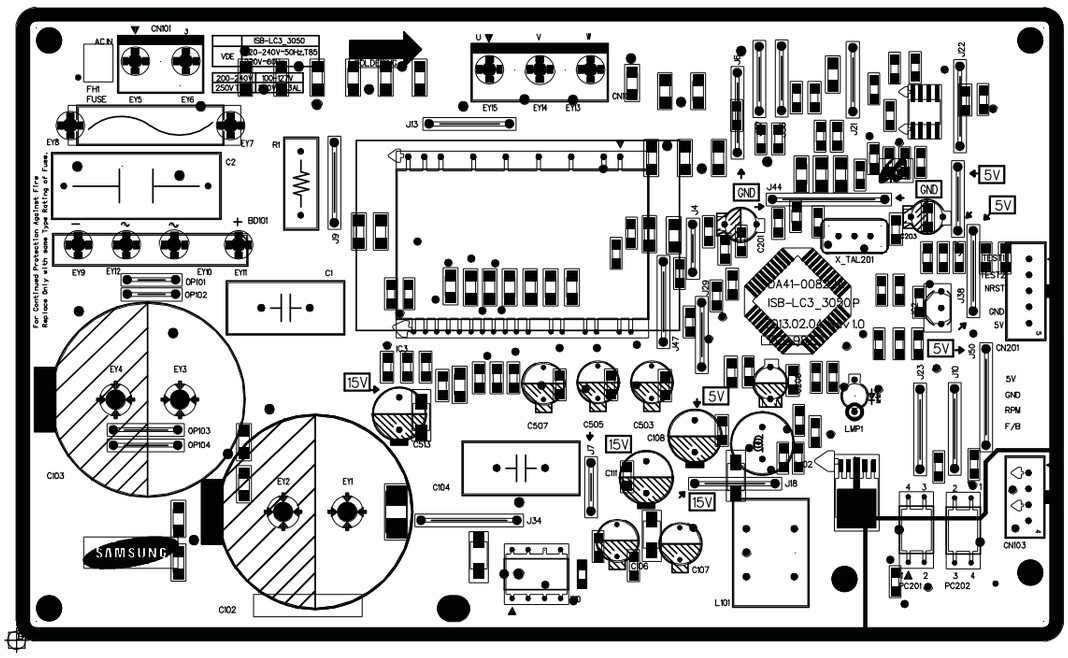
PCB DIAGRAM

5-2. PBA Layout with part position (Inverter Board)



1. PCB Power Supply : From the AC Input Voltage(115V), it supplies DC 15V and 5V to the Inverter circuit for the Compressor control.
2. COMP Driving / Feedback Circuit
   It receives the COMP operation signals from the Main PBA and feedbacks the inverter errors to the Main PBA.
3. Micom (MN103SFC2D)
4. BOOTSTRAP Charger : It is an independent power circuit for the driving of the IMP High-Phase IGBT.
5. Current Pickup Circuit : It pickups the currents taken by the Shunt resistance and does the PWM DUTY control.
6. IPM (FNB40560)

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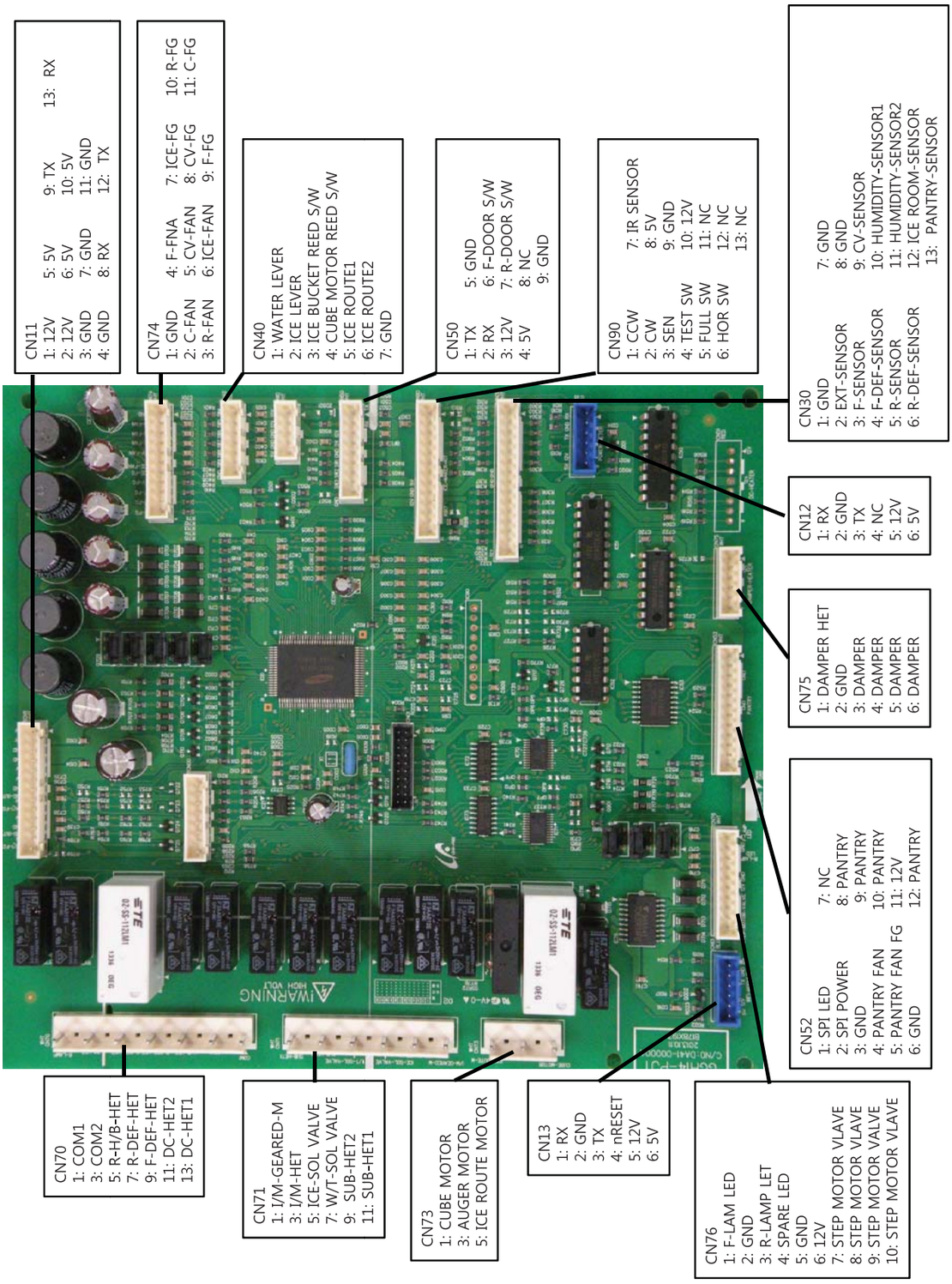
PCB DIAGRAM

5-3. Connector Layout with part position (Main Board)



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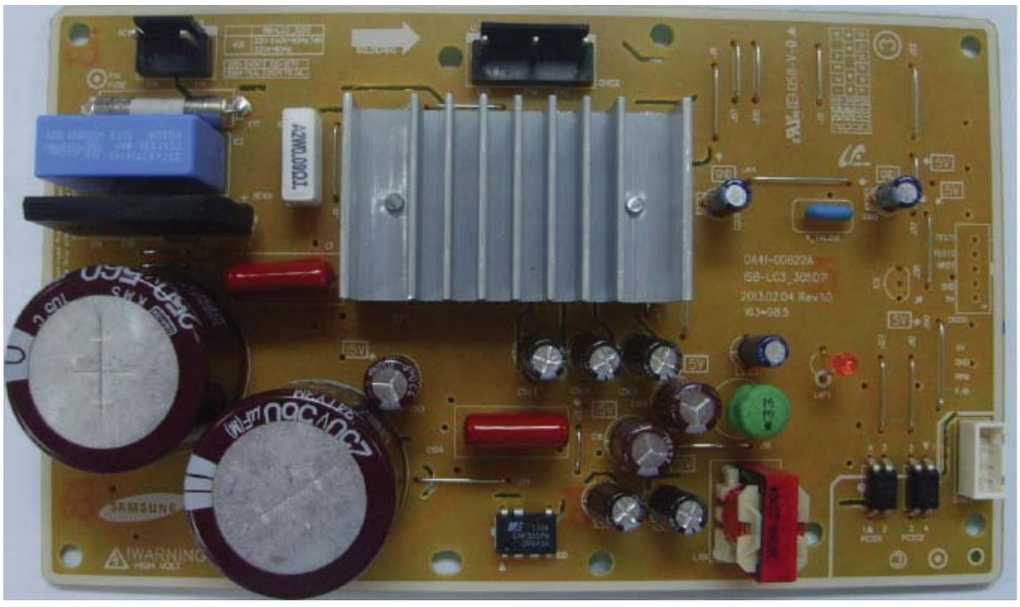
PCB DIAGRAM

5-4. Connector Layout with part position (Inverter Board)

AC 115V

COMP



1 : DC 5V
2 : GND
3 : COMP. RPM
4 : COMP. Feedback

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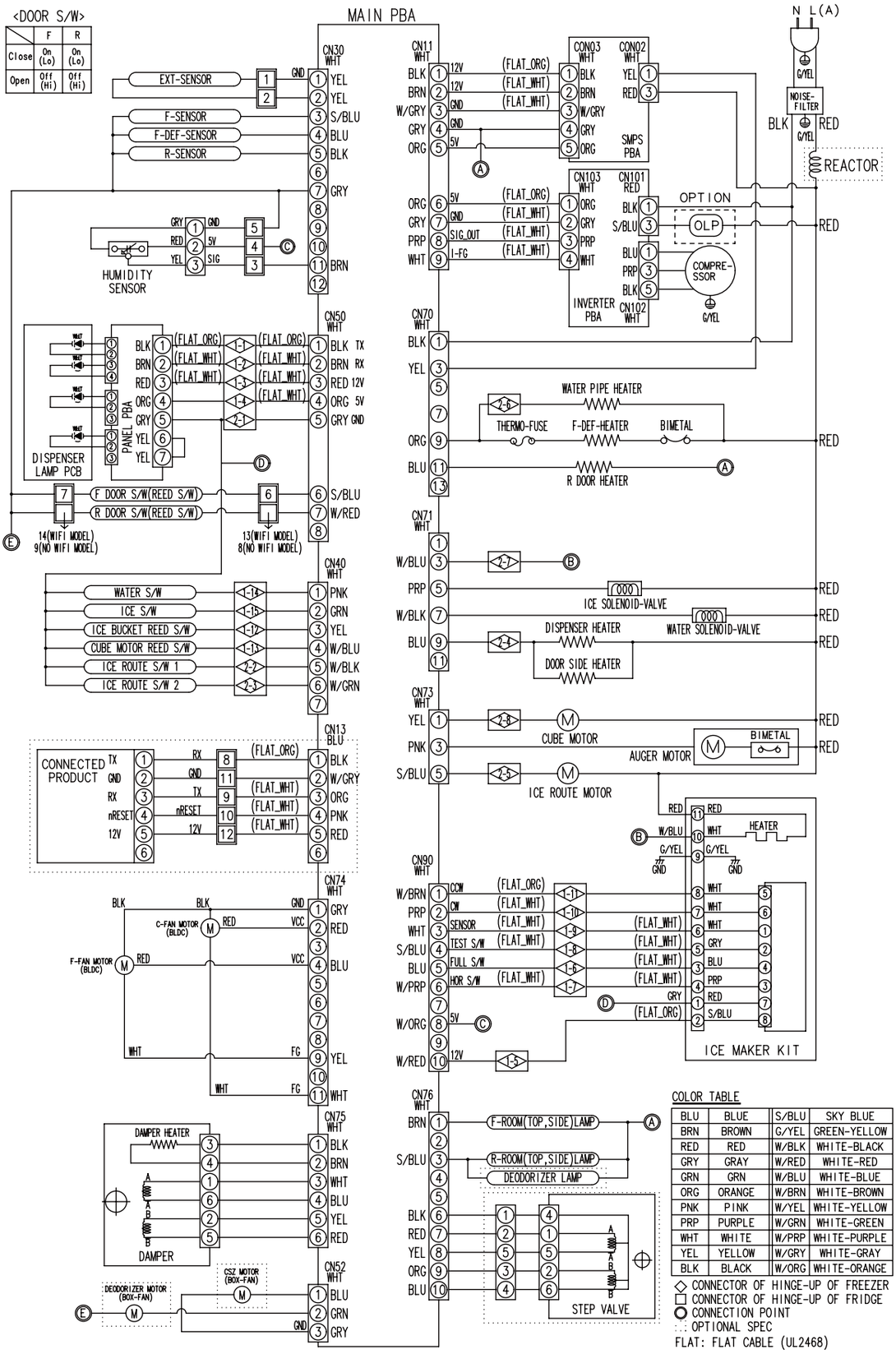
6. Wiring Diagram

6-1. Model : RH22*/RH29*



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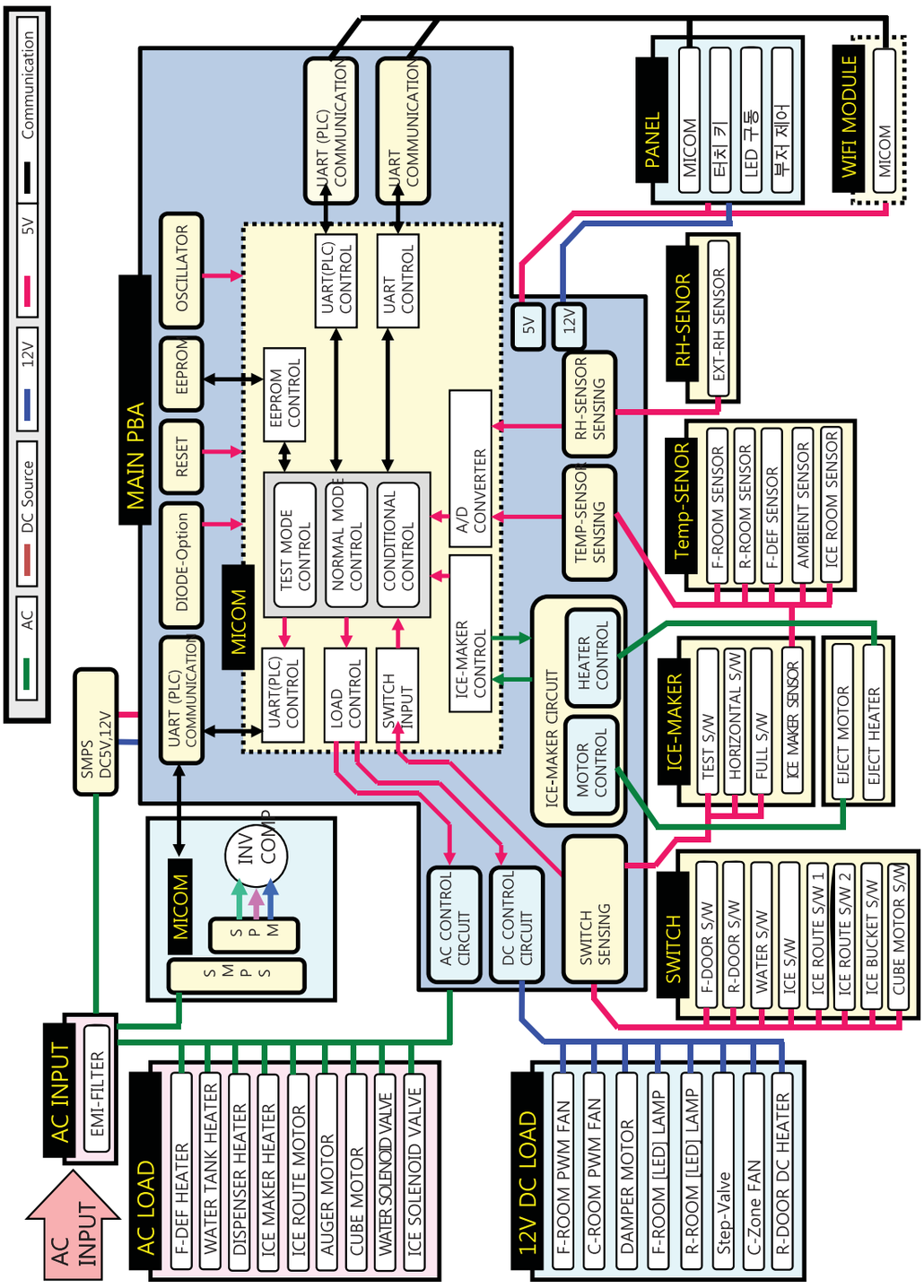
7. Block Diagram

7-1. Whole block diagram



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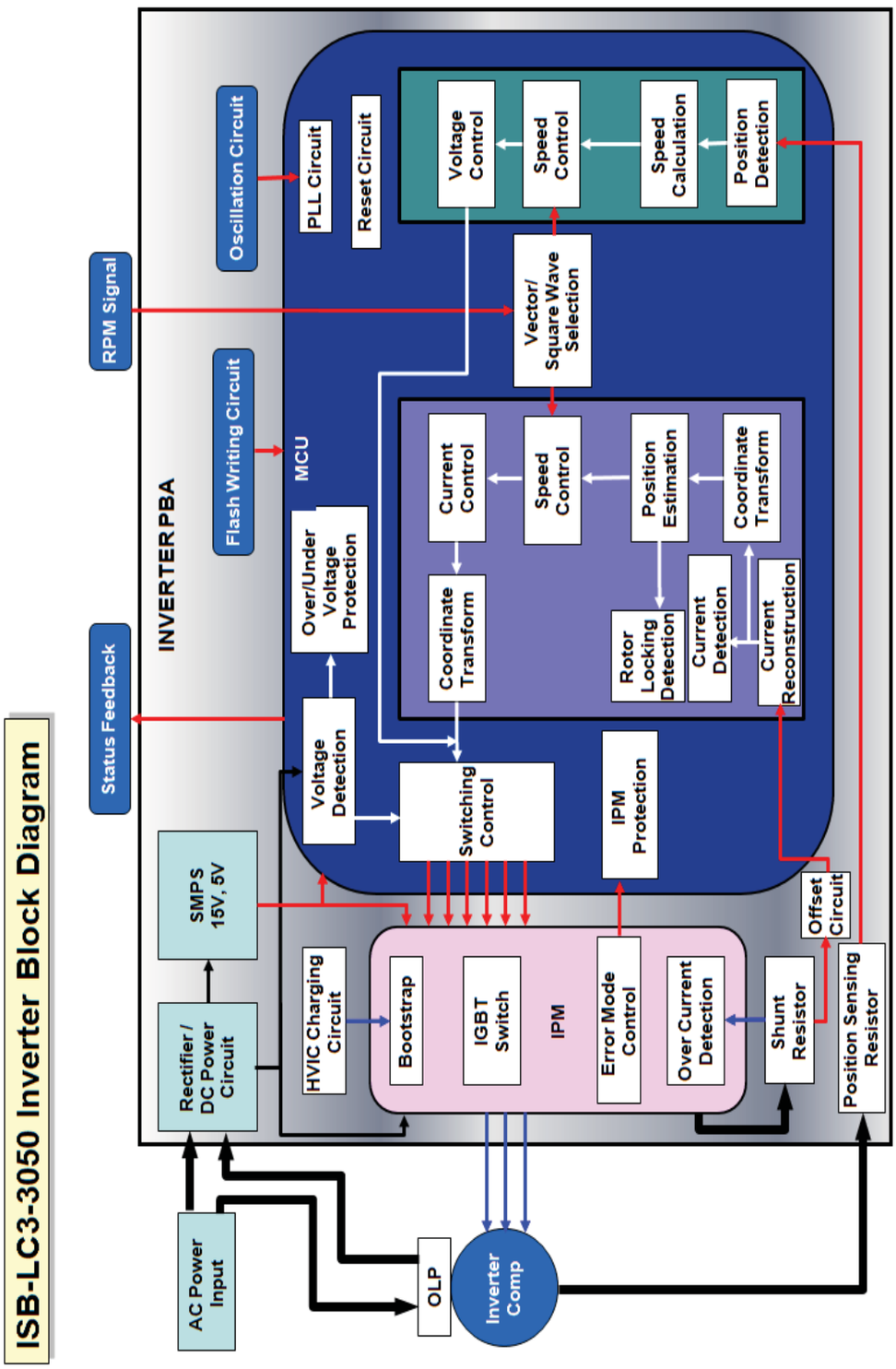
BLOCK DIAGRAM

7-2. Inverter Block Diagram



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RH9000HWC (FSR CD) Model Code

Product Name	RH9000
Project Name	RH9000HWC
Model Code	RH22H9010SR (Premium) / RH22H8010SR (Standard)

	Type		Capacity		Year	Series	Feature1	Feature2 (Interior/Energy)	Feature3	Color	
Model Code	R	H	2	2	H	9	0	0	0	S	R
Option	FSR (FoodShowcase)		22 : 22cf 57 : 570L (Disp.) 60 : 600L (No Disp.)		2014	9 Series : Innovative Product (Premium)	-	1 : I&W Disp, Door Metal, Door Drawer, E-Star (USA) 2 : Door Metal, Door Drawer, Wine rack, (China & CIS, BASIC Option, No Dispenser) 3 : I&W Disp, Wine rack, A+ Door Metal, Door Drawer Deletion(Europe) 5 : I&W Disp, Door Metal, Door Drawer, Wine rack, A+ (Europe, Global) 6 : I&W Disp, Door Metal, Door Drawer, Wine rack, A++ (SENA) 7 : I&W Disp, Door Metal, Door Drawer, Wine rack, A++ (Europe)	0 1 : China (Energy)	SR : Real STS 7H : Solid Metal 7F : Refined Steel 3L : Grade Metal WZ : Pearl White	
						8 Series : Standard Product (Good)	0 : I&W Dispenser (Black Display + 1Lever) Door Metal X Door Drawer X 1 : No Dispenser Door Metal X Door Drawer X	1 : Silver Trim Deco, DOE , Box 2EA (USA) 3 : No Silver Trim Deco, Box 2EA, A+ (Global) 5 : No Silver Trim Deco, Box 2EA(China) 6 : No Silver Trim Deco, Box 2EA, A++ (Europe)	0		

RH9000HW (FSR FS) Model Code

Product Name	RH9000
Project Name	RH9000HW
Model Code	RH29H9000SR (Premium) / RH29H8000SR (Standard)

	Type		Capacity		Year	Series	Feature1 (Exterior)	Feature2 (Interior)	Feature3 (Energy)	Color	
Model Code	R	H	2	9	H	9	0	0	0	S	R
Option	FSR (Food Showcase)		29 : 29cf 77 : 770L 79 : 790L (Disp.) 80 : 800L (No Disp.)		2014	9 Series : Innovative Product (Premium)	0 : I&W Dispenser (STS Looking + 2 Lever) Door Metal O Door Drawer O	0 : Silver Trim Deco, Easy Slide E-Star (USA) 5 : Silver Trim Deco, Easy Slide, Semi CSZ, Wine rack, A+ 8 : Silver Trim Deco, Easy Slide, Semi CSZ, Wine rack, Back Metal, Deodorizer	0 : '14 E-Star, A+ (Korea)	SR : Real STS 7H : Solid Metal 7F : Refined Steel WZ : Pearl White	
						8 Series : Standard Product (Good)	0 : I&W Dispenser (Black Display + 1Lever) Door Metal X Door Drawer X 1 : No Dispenser Door Metal X Door Drawer X	0 : Silver Trim Deco, DOE , Box 2EA (USA) 3 : No Silver Trim Deco, Box 2EA (Global)	0 : DOE, A+		

MODEL CODE TABLE

8-2. MODEL (E-COST)

[GLOBAL] RH9000HC (FSR CD) Model Code

Type		Capacity		Year	Series	Feature1	Feature2 (Interior/Energy)	Feature3	Color	
R	H	2	2	H	9	0	0	0	S	R
		5	7	J					S	R
		6	0							
FSR (FoodShowcase)		22 : 22cf 57 : 570L (Disp.) 60 : 600L (No Disp.)		H:2014 J:2015	9 Series : Innovative Product (Premium)	0 : I&W Dispenser (STS Looking + 2 Lever) Door Metal O Door Drawer O **Mono_Cool** **5: I&W Dispenser (STS Looking + 2Lever)** **Door Metal O** **Door Drawer O** **Twin_Cool**	1 : I&W Disp, Door Metal, Door Drawer, E-Star (미국) 2 : Door Metal, Door Drawer (China & CIS, BASIC 옵션, **No Dispenser**) 3 : I&W Disp, Wine rack, A+, Door Metal, Door Drawer 삭제 (유럽) **4 : I&W Disp(Non-Plumbing), Door Metal, Door Drawer, Wine rack, A+ (유럽,미국 제외 Global), 냉장실 Drawer 2개** 5 : I&W Disp, Door Metal, Door Drawer, Wine rack, A+ (유럽,미국 제외 Global) 6 : I&W Disp, Door Metal, Door Drawer, Wine rack, A++ (유럽 내 핸제 제외 지역 SENA) 7 : I&W Disp, Door Metal, Door Drawer, Wine rack, A++ (유럽) **8: I&W Disp (Sparkling),** Door Metal, Door Drawer, Wine rack, A+ (유럽,Global) **9: I&W Disp (Sparkling),** Door Metal, Door Drawer, Wine rack, A++ (유럽)	0 **8: Show window**	SR : Real STS 7H : Solid Metal 7F : Refined Steel 3L : Grade Metal WZ : Pearl White 5L: ALF SA: PCM (Metal Graphite)	
					8 Series : Standard Product (Good 사양)	0 : I&W Dispenser (Black Display + 2Lever) Door Metal X Door Drawer X 1 : No Dispenser Door Metal X Door Drawer X 2 : I&W Dispenser (Black Display + 1Lever) Door Metal X Door Drawer X **3: '0' 에 Twin Cool** **4: "1"에 Twin Cool** **5: "2"에 Twin Cool**	1 : Silver Trim Deco, DOE , Box 2개 (미국 전용) 3 : No Silver Trim Deco, Box 2개, A+ (미국 제외 Global) **4: No Silver Trim Deco, Box 2개, A+ (미국 제외 Global) + Non-Plumbing** 5 : No Silver Trim Deco, Box 2개, 초1등급 (중국) (도어 Metal Cool 적용) 6 : No Silver Trim Deco, Box 2개, A++ (구주) 7: No Silver Trim Deco, Box 2개, 대만 3등급 8 : No Silver Trim Deco, Box 2개, 1등급 (중국) (도어 Metal Cool 적용)	0 :Indoor Case 사출성형 1 : Indoor Case 진공성형 **8: Show window**		

[GLOBAL] RH9000H (FSR FS) Model Code

Product Name	RH9000
Project Name	RH9000HW
Model Code (대표)	RH29H9000SR (Premium) / RH29H8000SR (Standard)

	Type		Capacity		Year	Series	Feature1 (Exterior)	Feature2 (Interior)	Feature3 (Energy)	Color	
Model Code	R	H	2	9	H	9	0	0	0	S	R
			7	7	J						
			8	0							
Option	FSR (FoodShowcase)		29 : 29cf 30 : 30cf 77 : 770L 79 : 790L (Disp.) 80 : 800L (No Disp.)		H:2014 J:2015	9 Series : Innovative Product (Premium)	0 : I&W Dispenser (STS Looking + 2 Lever) Door Metal O Door Drawer O **Mono_Cool** 5 : I&W Dispenser (STS Looking + 2 Lever) Door Metal O Door Drawer O **Twin_Cool**	0 : Silver Trim Deco, Easy Slide E-Star (미국 전용) **4: Non-Plumbing Silver Trim Deco, Easy Slide, Semi CSZ, Wine rack, A+ (미국,한국 제외 글로벌)** 5 : Silver Trim Deco, Easy Slide, Semi CSZ, Wine rack, A+ (미국,한국 제외 글로벌) 8 : Silver Trim Deco, Easy Slide, Semi CSZ, Wine rack, Back Metal 청정제균탈취기 1등급 (한국) ** Easy Slide는 Mono_Cool만 해당	0 : '14 E-Star, A+, 1등급 (Korea) **8: Show window**	SR : Real STS 7H : Solid Metal 7F : Refined Steel WZ : Pearl White	
						8 Series : Standard Product (Good 사양)	0 : I&W Dispenser (Black Display + 1Lever) Door Metal X Door Drawer X 1 : **No Dispenser** Door Metal X Door Drawer X **4: '0'에 Twin Cool** **5: '1'에 Twin Cool**	0 : Silver Trim Deco, DOE , Box 2개 (미국 전용) 3 : No Silver Trim Deco, Box 2개 (미국 제외 Global) **4: Non-Plumbing, No Silver Trim Deco, Box 2개(미국 제외 Global)**	0 : DOE, A+ **8: Show window**		

107, Hanamsandan 6 Beon-Ro,Gwangsan-Gu,
Gwangju 506-723 Korea
TEL : 82-62-950-6193, 6896
FAX : 82-62-950-6829

Europe, CIS, Mideast & Africa: gspn1.samsungcsportal.com
Asia: gspn2.samsungcsportal.com
North & Latin America: gspn3.samsungcsportal.com
China: china.samsungportal.com

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